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BEFORE THE ARIZONA CORPORATION COMMISSION

DOUG LITTLE
CHAIRMAN
BOB STUMP
COMMISSIONER
BOB BURNS
COMMISSIONER
TOM FORESE
COMMISSIONER
ANDY TOBIN
COMMISSIONER

IN THE MATTER OF THE APPLICATION OF
ARIZONA PUBLIC SERVICE COMPANY
FOR A HEARING TO DETERMINE THE
FAIR VALUE OF THE UTILITY PROPERTY
OF THE COMPANY FOR RATEMAKING
PURPOSES, TO FIX A JUST AND
REASONABLE RATE OF RETURN
THEREON, TO APPROVE RATE
SCHEDULES DESIGNED TO DEVELOP
SUCH RETURN

Docket No. E-01345A-16-0036

E-01345A-16-0123

NOTICE OF FILING

The Residential Utility Consumer Office ("RUCO") hereby provides notice of filing
the Direct Testimony of John Cassidy and Frank Radigan, in the above captioned
proceeding.

RESPECTFULLY SUBMITTED this 22nd day of December, 2016.

Arizona Corporation Commission
DOCKETED
DEC 22 2016
DOCKETED BY:

Daniel W. Pozefsky
Chief Counsel

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ARIZONA PUBLIC SERVICE COMPANY
DOCKET NO. E-01345A-16-0036

REDACTED DIRECT TESTIMONY
OF
FRANK RADIGAN

ON BEHALF OF THE
RESIDENTIAL UTILITY CONSUMER OFFICE

DECEMBER 22, 2016

TABLE OF CONTENTS

EXECUTIVE SUMMARY	II
INTRODUCTION	1
SCOPE OF TESTIMONY	3
SUMMARY OF TESTIMONY	5
POST TEST YEAR PLANT	8
DEPRECIATION STUDY.....	15
EEI DUES AND D&O INSURANCE	26
DEFERRAL MECHANISMS.....	29

EXECUTIVE SUMMARY

Arizona Public Service Company ("APS" or "Company") is an Arizona Corporation, and for profit, certificated Arizona public service Corporation that provides electric utility service to various communities throughout Arizona. On June 1, 2016, APS filed an application with the Arizona Corporation Commission ("Commission") for a permanent rate increase. APS provides electric service to more than 1.2 million customers in Arizona and is located at 400 North 5th Street, Phoenix, Arizona 85004.

The Company utilized a test year ended December 31, 2015. The Company-proposed rates, as filed, produce total operating revenue of \$3.480 billion an increase of \$433.4 million over adjusted test year revenue of \$3.047 billion. The Company-proposed revenue will provide operating income of \$550.5 million a 5.84% rate of return on its proposed \$9.98 billion fair value rate base ("FVRB").

APS proposes to increase net base rate revenues by \$165.9 million, which would increase the amount of net revenue APS currently collects from customers by 5.74%. APS also seeks to transfer to base rates \$267.6 million that is currently collected in adjustor mechanisms. Because this amount is already reflected in customers' bills, however, transferring these dollars into base rates is revenue neutral and therefore not included in the \$165.9 million cited above. Including the transferred adjustor mechanism revenue, the gross base rate revenue requirement increase is \$433.4 million, or 15%.

The Residential Utility Consumer Office ("RUCO") recommends rates that produce total operating revenue of \$3.295 billion an increase of \$243 million from the RUCO-adjusted test year revenue of \$3.052 billion. RUCO's recommended revenue will provide operating income of \$485.6 million and a 5.36 percent return on the \$9.655 billion RUCO-adjusted FVRB (see RUCO Schedule FWR-1). RUCO recommends allowing all adjustor revenues to be transferred to base rate which results in RUCO's recommended net base rate decrease of \$24.6 million.

Other Items:

RUCO recommends denial of the requested Ocotillo Deferral at this time.

RUCO recommends denial of the requested Four Corners Deferral and Step Increase at this time.

RUCO recommends denial of the requested Property Tax Deferral at this time.

RUCO recommends denial of the proposed changes to Lost Fixed Cost Recovery Mechanism ("LFCR").

RUCO recommends approval to the proposed changes to the Environmental Improvement Surcharge ("EIS"), the Transmission Cost Adjustor ("TCA") and the Power Supply Adjustor ("PSA").

INTRODUCTION

Q. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.

A. My name is Frank W. Radigan. I am a principal in the Hudson River Energy Group, a consulting firm providing services in electric, gas and water utility industry matters, and specializing in the fields of rates, planning and utility economics. My office address is 235 Lark Street, Albany, New York 12210.

Q. PLEASE DESCRIBE THE HUDSON RIVER ENERGY GROUP.

A. The Hudson River Energy Group ("HREG") is an engineering consulting firm specializing in the fields of rates, planning, economics and utility operations for the electric, natural gas, steam and water utility industries. HREG was founded in 1998 and has served a wide variety of clients including municipal utilities, government agencies, state commissions, consumer advocates, law firms, industrial companies, power companies, and environmental organizations. HREG conducts rate design and cost of service studies, and designs performance based rate plans. HREG also assists clients in handling the complexities of deregulation and restructuring, including Open Access Transmission Tariff pricing, unbundling of rates, resource adequacy, transmission planning policies and power supply. During HREG's existence, we have proffered our expertise before the Federal Energy Regulatory Commission ("FERC" or "Commission") and a large number of state utility regulatory commissions across the country.

1 **Q. PLEASE SUMMARIZE YOUR EDUCATION AND BUSINESS EXPERIENCE?**

2 A. I received a Bachelor of Science degree in Chemical Engineering from Clarkson
3 College of Technology in Potsdam, New York (now known as "Clarkson University")
4 in 1981. I received a Certificate in Regulatory Economics from the State University
5 of New York at Albany in 1990. From 1981 through February 1997, I served on the
6 Staff of the New York State Public Service Commission ("NYPSC") in the Rates and
7 System Planning sections of the Power Division. My responsibilities included,
8 resource planning and the analysis of rates, depreciation rates and tariffs of electric,
9 gas, water and steam utilities in the state. These duties also encompassed rate
10 design, performing embedded and marginal cost of service studies, as well as
11 depreciation studies.

12
13 Before leaving NYPSC, I was responsible for directing all engineering staff during
14 major proceedings, including those relating to rates, integrated resource planning
15 ("IRP") and environmental impact studies. In February 1997, I left NYPSC and
16 joined the firm of Louis Berger & Associates as a Senior Energy Consultant. In
17 December 1998, I formed my own consulting firm.

18
19 In my 34 years of experience, I have testified as an expert witness in utility rate
20 proceedings on more than one hundred occasions before various utility regulatory
21 bodies, including: the Arizona Corporation Commission, the Connecticut
22 Department of Public Utility Control (now the Connecticut Public Utilities Regulatory
23 Authority), the Delaware Public Service Commission, the Illinois Commerce
24 Commission, the Kentucky Public Service Commission, the Maryland Public Service

Commission, the Massachusetts Department of Telecommunications and Energy, the Michigan Public Service Commission, the Mississippi Public Service Commission, NYPSC, the New York State Department of Taxation and Finance, the Nevada Public Utilities Commission, the North Carolina Utilities Commission, the Pennsylvania Public Utility Commission, the Public Service Commission of the District of Columbia, the Public Utilities Commission of Ohio, the Rhode Island Public Utilities Commission, the Vermont Public Service Board, and the FERC. Currently, I advise a variety of regulatory commissions, consumer advocates, municipal utilities, and industrial customers concerning rate matters, including wholesale electricity rates and electric transmission rates. A summary of my professional qualifications and experience, including a listing of cases in which I have proffered testimony, is attached as Attachment FWR-1.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying on behalf of the Residential Utility Consumer Office ("RUCO").

Q. WERE YOUR TESTIMONY AND EXHIBITS PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION AND CONTROL?

A. Yes, they were.

SCOPE OF TESTIMONY

Q. WHAT IS THE SCOPE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I have been asked to review the engineering justification and ratemaking need for certain revenue requirement aspects of the Arizona Public Service Company's ("APS"

1 or "the Company" or "the Utility") rate request. I am also presenting RUCO's
2 recommended revenue requirement which include my proposed adjustments as
3 well as reflecting the recommending Return on Equity and Fair Value Increment
4 being recommended by RUCO witness John Cassidy.

5
6 **Q. HAVE YOU PREPARED SCHEDULES AND OTHER ATTACHMENTS IN**
7 **SUPPORT OF YOUR RECOMMENDATIONS?**

8 **A.** Yes, I have prepared three attachments and the standard schedules where RUCO
9 had changes to the Company's presentation and they are:

10
11 **Attachments**

12 Attachment FWR-1 - Resume of Frank W. Radigan

13 Attachment FWR-2 - APS Responses to Discovery on Edison Electric
14 Institute Dues - Confidential

15 Attachment FWR-3 - APS Responses to Discovery on Director and Officers
16 Liability Insurance

17 Attachment FWR-4 - APS Response to Discovery on Mechanics of Ocotillo
18 Deferral Mechanism

19 **Schedules**

20 Schedule FWR-1 - RUCO Schedule A-1

21 Schedule FWR-2 - RUCO Schedule B-1

22 Schedule FWR-3 - RUCO Schedule B-2

23 Schedule FWR-4 - RUCO Schedule C-1

24 Schedule FWR-5 - RUCO Schedule C-2

SUMMARY OF TESTIMONY

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. My testimony addresses five areas: 1) the overall revenue requirement being proposed in the case by RUCO, 2) the Company's proposal to include 18 months of post test plant additions in the calculation of the revenue requirement, 3) the Company's depreciation study and proposed depreciation rates, 4) the appropriate sharing percentage between ratepayers and shareholders for Edison Electric Institute dues and Directors and Officers liability insurance and 5) , the Company's proposed deferral mechanisms and changes to various adjustor mechanisms (LFCR, EIS, and TCA).

The Company's filing seeks all of the same issues/terms that it was given in the settlement of its last rate case (Docket No. E-01345A-11-0224) including the LFCR, modification of the EIS, 18 months of post-test year plant additions (as opposed to 15 mos. in the last case) and a property tax deferral (Company witness Lockwood Direct at 3-4). Other adjustment mechanisms such as the Power Supply Adjustor (PSA) and the Transmission Cost Adjuster (TCA) were strengthened (Ibid), and finally, the Commission allowed the Company's investment in an additional share of Four Corners to be included in rates in at the end of 2014 (Ibid). All of these provisions of the settlement gave the Utility enhanced cash flow and strengthened its balance sheet. In return for all these advantages to the Utility the Company was able to cut costs and remain out of the rate case environment for five years instead of the four that was mandated by the settlement. In this case, however, the Company does not offer anything to ratepayers for the requested financial

1 protections. In the last case, it agreed to reduce its requested return on equity by
2 100 basis points, not to file a rate case for four years (thereby encouraging the
3 Utility to control costs) and no base rate increase. Here, the Utility seeks a 10.5%
4 return on equity (50 basis points higher than agreed to last time), no stay out
5 provision and a 15% rate increase which equates to a 2.8% per annum increase
6 since the last rate case and well above the 1.5% per annum increase in the CPI
7 over the last five years. This last point is particularly important as one need to
8 openly realize that the adjustor mechanisms act as automatic rate increases so they
9 tend to phase the increase over time and not eliminate it. Now, the Company seeks
10 to further strengthen its balance sheet and cash flows but gives no assurance that it
11 will not file for a rate increase in the near future. In sum, the filing as presented
12 offers ratepayers less than what they had under the previous settlement and
13 therefore many of the aspects the Company seeks should not be allowed to be put
14 in place as they are more appropriate as a part of a balanced multi-year rate plan
15 that gives something to both ratepayers and the Utility. Moreover, even if the Utility
16 were offering a long term rate plan, with the fact changing aspects of power delivery
17 due to the impact of the introduction of LED lights and the phase out of
18 incandescent bulbs, roof top solar, the closure of coal plants, and advances in wind,
19 long term rate plans may not be an attractive option for either ratepayers or the
20 Utility.

21
22 Based on the discussion above, I recommend rejection of all proposed deferral
23 mechanisms and the modifications to the LFCR. I recommend rejection of the
24 proposed 18 months of post-test year plant and instead only allow 6 month of post-

test year plant, as the Company has not shown it meets the Commission's stated metric for inclusion of such a generous allowance. I recommend two changes to the Company's depreciation study with one adjustment to a recommended average service life and a rebalancing of depreciation reserves from the over-recovery of reserve in nuclear production and use it to offset the increase due to the under-recovery of reserves at Cholla plant where two units are still in operation, the Ocotillo Steam Units, the Red Rock Combined Cycle Unit, and the stranded costs resulting from the retirement of Unit 2 at Cholla. I also recommend that the expenses for Edison Electric Institute dues and Directors and Officers liability insurance be shared 50/50 between ratepayers and shareholders instead of the 100/0 sharing proposed by the Company as these expense items benefit both shareholders and ratepayers alike. My testimony gives more detailed reasoning and explains the components of the various adjustments. The overall rate request by APS and that recommended by RUCO are presented below.

Overview of Rate Increase (\$ in Millions)		
	APS	RUCO
Total Rate Increase	\$433.434	\$242,970
Less Adjustors Already in Effect	\$267.551	\$267.551
Net Customer Bill Impact	\$164.883	(\$24,581)

POST TEST YEAR PLANT

Q. WHAT IS THE COMPANY PROPOSING WITH RESPECT TO POST TEST YEAR PLANT ADDITIONS?

A. APS witnesses John Lucas (Fossil), John Cadogan (Nuclear), Jacob Tetlow (Distribution and IT/Facilities), Stacy Derstine (Customer Service), and Scott Bordenkircher (Renewables, Microgrid and Technology Innovations) address the details of the Company's capital investments by functional area in their respective testimonies. The Company is proposing to include plant additions that go into service after the Test Year, but before new base rates are expected to be in effect (January 1, 2016 to June 30, 2017). APS witness Elizabeth Blankenship covers the mechanics of the pro-forma adjustment. As explained by witness Blankenship, the forecast plant in service cost of each project that is expected to go into service prior to July 1, 2017 was compiled by functional area (fossil generation, nuclear generation, distribution, general and intangible plant, renewables, modern grid, technology innovation, and customer service). For the rate base adjustment, CWIP was removed from the pro-forma and replaced with the forecast post- test year plant additions. Annual accumulated depreciation and amortization, net of accumulated deferred income taxes and tax credits (where applicable) were offset against the post-Test Year plant additions adjustment. The sum of the forecast plant in service costs, less accumulated depreciation and deferred income taxes, were calculated by functional unit and included in the Rate Base pro forma adjustments and they increase Rate Base at December 31, 2015 by \$295,082,000 (see Blankenship Direct at pages 27-28, Attachment EAB-18DR and SFR Schedule B-2, pages 1 and 2, columns 2 to 6). On the income statement depreciation expense, property taxes

1 and income taxes were also calculated by functional area and reflected in the
2 Company's pro-forma income statement (See Blankenship at pages 27-28 and
3 Attachment EAB-l9DR and SFR Schedule C-2, pages 1 and 2, columns 1-5).
4

5 **Q. WHAT IS THE IMPACT OF THE COMPANY'S PROPOSAL TO INCLUDE POST**
6 **TEST YEAR PLANT ADDITIONS IN THE REQUESTED REVENUE**
7 **REQUIREMENT?**

8 A. As explained by Company witness Snook, the Company is seeking a base rate
9 revenue increase of \$433,434,000 and that amount includes a \$267,551,000
10 increase in rates, resulting from moving various adjustor amounts from the
11 respective adjustor mechanisms into base rates. These adjustor transfers are
12 revenue neutral and do not change the amount collected on customer's bills it only
13 changes where the amounts will be collected (Snook Direct at page 3). As such,
14 the rate case can be seen as an increase in customer's rates of \$165,883,000. As
15 can be seen from the table below, the request for 18 months of post-test year plant
16 additions are quite substantial in both relative terms and with respect to the
17 overall rate case.
18
19
20
21
22
23
24

APS - Detail and Revenue Requirement Impact of Requested Post Test Year Plant Additions (\$000)								
Line No.	Functional Plant Area	Gross Plant in Service	Less: Accum.		Net Plant in Service	Less: Deductions	Total Additions	Total Rate Base
			Depr. and Amor.					
1	Fossil	\$ 160,635	\$ 218,381	\$ (57,746)	\$ (19,967)	\$ -	\$ (37,779)	
2	Nuclear	\$ 123,961	\$ 74,294	\$ 49,667	\$ 1,583	\$ -	\$ 48,084	
3	Distribution and IT/Facilities	\$ 470,386	\$ 383,258	\$ 87,128	\$ 11,672	\$ -	\$ 75,456	
4	Customer Service	\$ 120,485	\$ 6,050	\$ 114,435	\$ 6,426	\$ -	\$ 108,009	
5	Renewables, Microgrid and Technology Innovation	\$ 238,509	\$ 50,830	\$ 187,679	\$ 93,391	\$ 7,024	\$ 101,312	
6 = Sum Lines 1-5	Total Company	\$ 1,113,976	\$ 732,813	\$ 381,163	\$ 93,105	\$ 7,024	\$ 295,082	
7	Rate Base Rev. Req.						\$ 38,757	
8	Depreciation Expense	\$ 6,876	\$ 2,008	\$ 24,244	\$ 12,048	\$ 8,915	\$ 54,091	
9	Property Tax Expense	\$ 1,118	\$ 866	\$ 9,420	\$ 2,353	\$ 2,295	\$ 16,052	
10	Total Revenue Requirement						\$ 108,900	
	% of Rate Increase /1						66%	
/1 Based on APS Request of \$165,883,000								

Q. WHAT IS THE COMMISSION'S POLICY WITH RESPECT TO POST TEST YEAR PLANT?

A. As stated in Decision No. 67279, the Commission considers whether the inclusion if post-test year plant is appropriate on a case-by-case basis.¹ There the Commission summarized its policy by stating it has allowed the inclusion of post-test year plant in circumstances where the new plant is revenue neutral and there is no evidence of material mismatch between revenue and expenses and where the post-test year plant is required for system reliability or to provide adequate service (Ibid).

¹ Docket No. WS-02676A-03-0434 – In the matter of the Application of Rio Rico Utilities Inc. for permanent increases for water and wastewater utility service, Decision 67279, at 6.

1 I believe the best description of the Commission's guiding principles is that used in
2 Decision No. 71410². There the Commission explained that its rules require the end
3 of the test year, which is the one-year historical period used in determining rate
4 base, operating income and rate of return, to be the most recent practical date
5 available prior to the filing (Ibid at page 19). The Commission noted that a utility has
6 the freedom to choose a test year that includes all major rate base and operating
7 income items needed to support its rate application, and to include pro forma
8 adjustments to its chosen test year (Ibid at page 20). The Commission further noted
9 that matching is a fundamental principle of accounting and ratemaking, and the
10 absence of matching distorts the meaning of, and reduces the usefulness of,
11 operating income and rate of return for measuring the fairness and reasonableness
12 of rates (Ibid).

13
14 In that case, the Commission adopted several Staff adjustments in the case to
15 remove proposed post-test year plant additions from the rate setting process. In its
16 direct testimony in the case, Staff explained that the matching principle is the reason
17 that the Commission has allowed inclusion of post-test year plant in rate base only
18 in special and unusual situations, which could be summarized as follow:

20
21 ² Docket No. W-01303A-08-0227 — Application of Arizona-American Water Company, an Arizona
22 Corporation, for a determination of the current fair value of its utility plant and property and for increases in
23 its rates and charges based thereon for utility service by its Agua Fria Water District, Havasu Water
24 District, Mohave Water District, Sun City West Waste District and Tubac Water District and Docket No.
SW-01303A-08-0227 - Application of Arizona-American Water Company, an Arizona Corporation, for a
determination of the current fair value of its utility plant and property and for increases in its rates and
charges based thereon for utility service by its Mohave Wastewater District, Decision No. 71410.

- 1 1) when the magnitude of the investment relative to the utility's total
- 2 investment is such that not including the post-test year plant in the cost of
- 3 service would jeopardize the utility's financial health;
- 4 2) the cost of the post-test year plant is significant and substantial;
- 5 3) the net impact on revenue and expenses for the post test year plant is
- 6 known and insignificant (or is revenue-neutral); and
- 7 4) the post-test year plant is prudent and necessary for the provision of
- 8 services and reflects appropriate, efficient, effective, and timely decision-
- 9 making (Ibid).

10 Using these principles there have been a number of cases where the Commission
11 has found the need to include post-test year plant and in some cases up to a year of
12 post-test year plant but these have generally been water utilities and not electric or
13 gas utilities other than where it was agreed to in a comprehensive settlement of the
14 rate case.³

15
16
17 **Q. DO YOU AGREE WITH THIS REASONING?**

18 **A.** Yes, matching costs and revenues allows the test period to be the proper basis for
19 setting rates that are just and reasonable. For example, the inclusion of revenues
20 without matching costs may deny the utility reasonable rates. Similarly, the inclusion
21 of costs without matching revenues may produce excessive rates.

22
23 ³ See Decision No. 74235 (December 31, 2015), Decision No. 75268 (December 31, 2015), Decision No.
24 74568 (June 20, 2014), Decision No. 73912 (June 27, 2013), Decision No. 73183 (May 24, 2012), Decision
No. 67279 (October 5, 2004), Decision No. 66849 (March 19, 2004) and Decision No. 65350 (November 1,
2002).

1 **Q. DO YOU BELIEVE THE COMPANY HAS MADE A REASONABLE SHOWING**
2 **THAT IT NEEDS RATEPAYERS TO FUND THE REQUESTED POST TEST YEAR**
3 **PLANT ADDITIONS?**

4 A. No. Upon reviewing the Commission's policy on the allowance of post-test year plant
5 and the presentation made by the Company, I believe the Company has not met its
6 burden of proof that it is reasonable for it to be allowed 18 months of post-test year
7 plant additions. First, APS is asking for over \$1.1 billion of post-test year plant
8 additions, many of which are not revenue neutral as they relate to forecast customer
9 growth. As shown in the exhibits of Company witness Tetlow, almost 10% of the
10 post-test year plant additions are related to new load that will bring in new revenue to
11 the Company. However, there is no offsetting adjustments to revenues for this
12 increase load, as the Company only proposes to annualize customer levels to the
13 December 31, 2015 level (See Attachment JT-1DR Distribution Post-Test Year Plant
14 Additions, (lines 1, 2 and 4) and Attachment CAM-11DR). Second, the Company has
15 made no showing that not funding the post-test year plant additions would seriously
16 impact its financial health. Indeed, the Company witness Ewen states that the
17 settlement in the last rate case did not allow for funding of \$2.1 million of plant
18 additions which the Company made and are now serving customers (See Ewen
19 Direct at 11:4-8). Third, the \$1.1 billion of post-test year plant seems like a
20 substantial amount, as it is approximately half of what the Company was able to fund
21 on its own since the last rate case. Thus, there is no showing that the amount
22 requested is beyond this Utility's ability to absorb on its own. Fourth, while many of
23 projects are necessary to provide and maintain safe and reliable service (e.g.,
24 improvements at substations, equipment replacement projects at the power plant or a

1 new service center in Prescott, etc.) some are not vital to providing service on a day
2 to day basis (e.g., a micro grid project, a new solar plant, the advanced distribution
3 management system, research projects, or the new customer information system).
4 Indeed, if ratepayers were asked to weigh in on the reasonableness of these projects
5 I would state that I see little need for more solar at this time. I am equally dubious of
6 the immediate need for the distribution management system as many of its benefits
7 are stated to be for increased reliability, yet the Company is highly reliable now (See
8 Tetlow Direct at 8).

9
10 **Q. WHAT DOES RUCO RECOMMEND?**

11 A. RUCO's general policy is to consider post-test year plant that was placed into service
12 within six months after the end of the test year. This gives the Company sufficient
13 time to complete projects that were not complete at the end of the test year. Anything
14 longer distorts the meaning of a test year and alters the regulatory matching of
15 revenues, expenses and rate base. This policy will reduce the amount of allowed
16 post-test year plant additions. In addition, I propose to annualize customer levels to
17 June 30, 2016, to match the requested post-test year plant additions. I also propose
18 not to allow any property tax on post-test year plant additions, as the Company has
19 recognized that there is generally a two year lag on new Utility property reaching the
20 tax rolls, so no allowance for property tax is necessary.⁴ This proposal reduces
21 revenue requirement by increasing net revenues, decreasing depreciation expense,
22 decreasing property taxes and reducing rate base (OCRB and RCND equally). I
23
24

calculate the net impact of all these adjustments to be a reduction in revenue requirement of \$105 million.

DEPRECIATION STUDY

Q. WHAT IS DEPRECIATION?

A. According to the Supreme Court of the United States:

Broadly speaking, depreciation is the loss, not restored by current maintenance, which is due to all the factors causing the ultimate retirement of the property. These factors embrace wear and tear, decay, inadequacy and obsolescence. Annual depreciation is the loss which takes place in a year.⁵

Another commonly cited definition comes from the American Institute of Certified Public Accountants which defines depreciation as follows:

Depreciation accounting is a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage (if any) over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation. Depreciation for the year is a portion of the total charge under such a system that is allocated to the year. Although the allocation may properly take into account occurrences during the year, it is not intended to be a measurement of the effect of all such occurrences.

Q. WHAT IS AN AVERAGE SERVICE LIFE?

A. The service life of any one unit of property is the number of years of service that the property lasts. For example, while there may be many thousands of utility poles on a utility's system, each pole's service life is going to be impacted by its location, environment, and outside forces. Thus, while two poles may have been placed into

⁴ See Company response to Staff 9.19, Attachment lines 11, 40, 69 and 99 attached as RUCO Attachment FWR-4

1 service on the same day, one pole might be close to a main street while the other
2 might be placed in a rural area with sandy, well-drained soil away from any nearby
3 trees. The first pole might only survive for two or three years while the second
4 might be in service for sixty or seventy years. The use of an average service life
5 for a property group implies that the various units in the group have different lives.
6 Thus, the average life may be obtained by determining the separate lives of each of
7 the units, or by constructing a survivor curve by plotting the number of units which
8 survive at successive ages.

9
10 **Q. WHAT IS AN IOWA CURVE?**

11 A. The range of survivor characteristics usually experienced by utility and industrial
12 properties is encompassed by a system of generalized survivor curves known as
13 the Iowa type curves. The Iowa curves were developed at the Iowa State College
14 Engineering Experiment Station through an extensive process of observation and
15 classification of the ages at which industrial property had been retired. There are
16 four families in the Iowa system, labeled in accordance with the location of the
17 modes of the retirements in relationship to the average life and the relative height of
18 the modes. The left-moded curves or L Curves are those in which the greatest
19 frequency of retirement occurs to the left of, or prior to, average service life. Think of
20 a type of property where some might not last very long, but then others might last a
21 very long time. One might imagine that this could occur with Chevrolet Corvettes,
22 where some are driven at high speeds and crashed while others are cherished and
23

24 ⁵ *Lindheimer v. Illinois Bell Tel. Co.*, 292 U.S. 151, 167 (1934) (footnote omitted).

1 pampered in the garage. If a substantial proportion of a particular type of property
2 is retired early compared to the average life of the property, the curve is moded to
3 the left. The symmetrical-moded curves, or S Curves, are those in which the
4 greatest frequency of retirement occurs at the average service life. The right-moded
5 curves, or R Curves, are those in which the greatest frequency occurs to the right
6 of, or after, the average service life. The origin moded curves, or O Curves, are
7 those in which the greatest frequency of retirement occurs at the origin, or
8 immediately after age zero. The letter designation of each family of curves (L, S, R
9 or O) represents the location of the mode of the associated frequency curve with
10 respect to the average service life. The numbers represent the relative heights of
11 the modes of the frequency curves within each family.

12
13 **Q. WHAT IS NET SALVAGE?**

14 A. Net salvage is the value obtained from retired property (the gross salvage) less the
15 cost of removal. Net salvage can be either positive or negative. Net salvage can
16 be positive in cases where the salvage value of the property exceeds the cost of
17 removing the property.

18
19 **Q. HOW DOES NET SALVAGE IMPACT THE CALCULATION OF DEPRECIATION?**

20 A. The intent of the depreciation process is to allow the Company to recover 100% of
21 proven investment less net salvage. Therefore, if net salvage is a positive 10%,
22 then the utility should only recover 90% of its investment through annual
23 depreciation charges under the theory that it will recover the remaining 10% through
24 net salvage at the time the asset retires ($90\% + 10\% = 100\%$). Alternatively, if net

1 salvage is a negative 10%, then the utility should be allowed to recover 110% of its
2 investment through annual depreciation charges so that the negative 10% net
3 salvage that is expected to occur at the end of the property's life will still leave the
4 utility whole (110% - 10% = 100%).
5

6 **Q. WHAT IS A DEPRECIATION RATE?**

7 A. The depreciation rate is expressed as a percentage and is calculated by subtracting
8 the net salvage percent from 100% and then dividing by the remaining average
9 service life.
10

11 **Q. WHAT IS DEPRECIATION EXPENSE?**

12 A. The depreciation expenses of a utility are determined by applying approved
13 depreciation rates to the depreciable plant balances.
14

15 **Q. WHAT IS THE DEPRECIATION RESERVE?**

16 A. While depreciation expense represents the annual recovery of the capital
17 investment, there is another depreciation category that records all depreciation
18 expense, retirements, cost of removal and gross salvage on a continuous basis.
19 This account is the accumulated provision for depreciation, also known as the
20 depreciation reserve. The depreciation reserve serves as a "running total" of the
21 extent to which individual assets or groups of assets have been depreciated. In a
22 depreciation study, the depreciation reserve is known by several other names as
23 well, the most notable being the "book reserve," the "recorded reserve" or the
24 "actual reserve". There is also a theoretical reserve where the depreciation

1 parameters coming from the depreciation analysis are applied to the existing plant
2 balances and a determination is made as to how much accumulated depreciation
3 should exist. This is known as the "computed reserve" or "theoretical reserve". If
4 the computed reserve is greater than the book reserve then the account is "under
5 accrued" (i.e. existing or past deprecation rates were inadequate to recover all the
6 cost in the account). If the computed reserve is less than the book reserve then the
7 account is "over accrued".
8

9 **Q. CAN YOU GIVE AN EXAMPLE OF "UNDER ACCRUAL"?**

10 A. Yes, it may be best to think of a single unit of property such as a generator. Let's
11 say the generator was built in the year 2000 and it entered service on January 1st of
12 that year and it was expected to last 40 years (in service until December 31st,
13 2039), with zero net salvage. The deprecation rate would be 2.5% per year,
14 $((100\%-0\%)/40)$. If the original cost was \$200,000,000 the annual accrual would be
15 \$5,000,000. Assuming no retirements at the plant, in the year 2010 the plant would
16 have accumulated a book reserve of \$50,000,000. Now for some change in
17 technology or an environmental regulation the owners of the plant now must retire
18 the plant by the year December 31, 2029 or ten years less than originally forecast.
19 Using a 40 year life the plant should have been accruing at 3.33% per year, $(100\%-$
20 $0\%)/30)$, and the theoretical reserve should be \$66,000,000 per year. In this
21 example therefore there is an "under accrual" of \$16,000,000 (\$50,000,000 -
22 \$66,000,000).
23
24

1 This is the type of thing that happened at Cholla 2. It was being depreciated with an
2 assumed retirement date of 2033 but was retired in 2015. The under accrual
3 caused by this then became recorded as a regulatory asset which the Company
4 now seeks to amortize (See Company Witness Blankenship at 24). Similarly, the
5 remaining Cholla units are not expected to remain in service as previously thought
6 and now have an approximate \$120 million under accrual which is largely the
7 reason for the approximate \$24 million increase in Cholla depreciation expense that
8 is being proposed by Company Witness White (See Attachment REW-2DR, pages
9 38 and 26 respectively).

10
11 There is also a large under accrual at the Redhawk Combined Cycle plant,
12 approximately \$82 million, which is the most significant reason for the requested
13 \$8.1 million increase in depreciation expense for this facility. It is not changing life
14 parameters that cause the under accrual for this plant, but rather retirements of a
15 significant volume for a plant that became operational only 14 years ago, 2002. In
16 the last deprecation study, the book to theoretical reserve were within 2% of each
17 other. In the intervening 5 years, however, there have been non-reimbursed
18 retirements of approximately \$120 million out of a total investment in 2010 of \$508
19 million. These premature retirements are the cause for the large under accrual.

20
21 **Q. CAN YOU GIVE AN EXAMPLE OF AN OVER ACCRUAL?**

22 **A.** Yes and we have another APS unit to serve as an example. The Palo Verde
23 Nuclear plant was built over the years 1986-1988 with the last unit being placed into
24 service in 1988. The plant had an operating license of 40 years and was being

1 depreciated over that time period. In 2011 the plant received a 20 year extension to
2 its operating license which resulted in the depreciation reserve having a large "over
3 accrual". In the last APS rate case the depreciation rate was reset and the plant
4 had an over accrual of \$485 million and depreciation expense was lowered by
5 approximately \$35 million to reflect the new license retirement date. The large over
6 accrual still exists and Company Witness White has calculated to be \$435 million.

7
8 **Q. WHAT IS THE SUM TOTAL OF THE IMPACTS OF THESE OVER AND UNDER**
9 **ACCRUALS?**

10 A. The Company has a regulatory asset for the retired Cholla Unit 2 in the amount of
11 \$123 million; the remaining Cholla Units have a further under accrual of \$118
12 million, the Ocotillo Steam Units have an under accrual of \$10 million and the
13 Redhawk units \$82 million which add to a total under accrual of \$335 million. As
14 noted above these large over accruals are largely responsible for the proposed \$79
15 million in increased depreciation/amortization expense. The over accrual at the
16 Palo Verde plant is already being reflected in rates as result of the resetting of
17 depreciation rates in the last APS rate case and is being passed back over the 27
18 years of remaining license life.

19
20 **Q. IS THERE AN ALTERNATIVE TO WHAT THE COMPANY PROPOSES?**

21 A. Yes, redistribution of reserves from plants that are over accrued to plants that are
22 under accrued. This is already part of the Company's study and for good reason.
23 Company Witness White states that a redistribution of recorded reserves is
24 appropriate (See White Direct at 9). He further states that offsetting reserve

1 imbalances attributable to both the passage of time and parameter adjustments
2 recommended in the study should be realigned among accounts to reduce offsetting
3 imbalances and increase depreciation rate stability (Ibid). Company Witness White
4 limits his redistribution by functional area to plant location, however, but this does
5 not have to be the case and Arizona has recognized this.

6
7 In Docket number E-01933A-12-0291, in a Proposed Settlement Agreement filed on
8 February 4, 2013 for Tucson Electric Power Company ("TEP"), the parties agreed
9 that if TEP makes any filing with the Commission related to the early retirement of
10 any production asset, TEP will propose that any then-existing excess depreciation
11 reserve for Production Plant will be applied to the unrecovered book value of the
12 retiring asset. The Commission approved that Settlement Agreement in Decision
13 No. 73912.

14
15 In the last TEP rate case, the parties again agreed to redistribute reserve among
16 plant accounts. In the Settlement Agreement in that case, Docket No. E-01933A-
17 15-0322 filed on August 15, 2016, the parties agreed that in recognition that TEP's
18 remaining unit at the San Juan Generating Station could be prematurely retired the
19 depreciation rates would reflect a depreciable life of six years and be paid for from
20 the use of \$90 million of excess distribution reserves from TEP's distribution plant
21 (Settlement Agreement Section 4.1). The Commission has yet to file a final
22 Decision in that Docket, but no party has opposed that provision of the Settlement
23 Agreement.

1 **Q. WHAT DO YOU PROPOSE?**

2 A. I propose that the adjusted regulatory asset for Cholla 2, the under accrual of
3 reserves for the remaining Cholla Units and the under accruals for the Ocotillo
4 Steam Units and the Redhawk combined cycle units be offset by the over accrual at
5 Palo Verde. Naturally, this will decrease the proposed depreciation/amortization
6 rates for the units whose under recoveries are being eliminated and increase the
7 depreciation expense for the Palo Verde plant, but the net result is a decrease in
8 overall depreciation/amortization expense paid by ratepayers.

9
10 **Q. PLEASE EXPLAIN WHAT YOU MEAN BY THE ADJUSTED REGULATORY**
11 **ASSET FOR CHOLLA 2.**

12 A. Yes. After considering the costs to comply with environmental regulations, on
13 September 11, 2014, APS announced that it would close Cholla Unit 2 (See
14 Blankenship Direct at 24). APS closed Unit 2 on October 1, 2015 (Ibid). When APS
15 shut down that unit, it was transferred from plant in service to a regulatory asset
16 (Ibid). The regulatory asset includes the remaining net book value of Cholla Unit 2
17 and the accrual of remaining removal costs for final retirement and dismantlement
18 (Ibid). On April 14, 2015, the ACC approved APS' plan to retire Unit 2, without
19 expressing any view on the future recoverability of APS' remaining investment in the
20 Unit (APS 2015 Form 10-K at 13). APS has made two adjustments in the case to
21 reflect the closure of Cholla 2. First, it removed the 2015 non-fuel and non-labor
22 costs associated with the plant as a normalizing adjustment to the test year (See
23 Blankenship Direct at 24). This increased pre-tax operating income of \$17,355,000
24 (Ibid). Second, APS seeks to amortize the regulatory asset over the plant life

1 assumption set in the last rate case, which was that the plant would retire in 2033,
2 to which they seek to amortize the cost over the remaining 16 years. This
3 adjustment includes the regulatory asset in rate base and decreases pre-tax
4 operating income by \$7,890,000.

5
6 Since the plant was transferred to a regulatory asset in the third quarter of 2015 and
7 rates will not be reset until June 1, 2017, I agree with the Company's normalizing
8 adjustment to remove the test year expense before setting rates for the pro-forma
9 period. That said, since the Commission only approved the establishment and not
10 rate recovery of the regulatory asset, I believe it proper to determine the reasonable
11 level of assets that were stranded at the time of retirement, and given the fact that
12 current rates were set to recover the costs of this facility, one should also recognize
13 that the Utility had cash flow associated with the plant which should be recognized
14 in setting the level of the regulatory asset. In this case, the cash flow to the
15 Company relates to the non-labor O&M and depreciation (but not property taxes
16 due to the previously mentioned two year lag). This cash flow has to be reduced for
17 income taxes (as the reduction in expenses raised net income) but the cash flow
18 lasts for 21 months (the time period between the time of closure and the time when
19 rates will be reset). Using the Company's figures, I calculate that the cash flow
20 resulted in net cash available to the Company of \$16.3 million and should be used
21 to offset the regulatory asset reducing it from \$122.6 million to \$106.3 million, and I
22 have used this figure in my calculation of revenue requirement.

1 **Q. WHAT IS THE NET IMPACT OF THE REDISTRBUTION OF RESERVES?**

2 A. The net impact is to lower depreciation and amortization expense by approximately
3 \$24 million and decrease rate base by \$10 million.
4

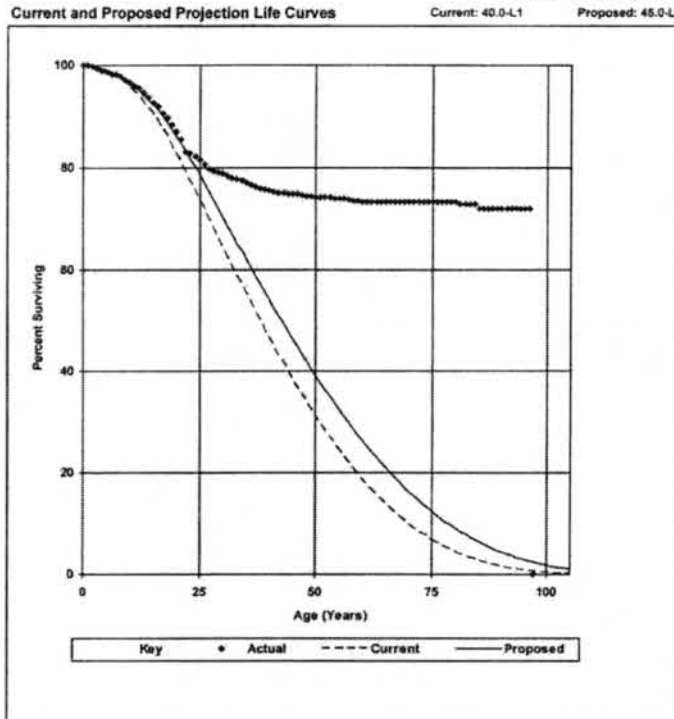
5 **Q. DO YOU HAVE ANY OTHER ADJUSTMENTS TO THE COMPANY'S**
6 **DEPRECIATION STUDY?**

7 A. I have reviewed all of the proposed average service life and net salvage
8 recommendations contained in the study and propose just one change and that is to
9 the average service life of Account 369 – Services. The graph below shows the
10 current and proposed life curves for this account (40 – L1 present and 45 L1
11 proposed), as well as the observed life table for the longest experience band of the
12 historical data. As can be seen, neither the present or proposed average service
13 life come anywhere near the observed life table, as they are much too short. I have
14 reviewed the work papers supplied by the Company for this account and the
15 statistical data for curve fitting the observed life table to the Iowa Curves indicates a
16 service life of 65 or more years is more indicative of how the equipment in this
17 account will survive. Given the vastly wide disparity between the observed data and
18 the proposed average service life, I recommend that the statistical data be used and
19 the average service life be set at 65 years. This recommendation reduces the
20 proposed depreciation expense for this account by \$4.3 million.
21
22
23
24

Schedule E

ARIZONA PUBLIC SERVICE COMPANY
Distribution Plant
Account: 369.00 Services

T-Cut: None
Placement Band: 1909-2015
Observation Band: 1971-2015



EEI DUES AND D&O INSURANCE

Q. WHAT IS D&O LIABILITY INSURANCE?

A. D&O liability Insurance is liability insurance that covers directors and officers for claims made against them by shareholders or others for decisions they may make.

Q. HAS THE COMPANY REQUESTED THAT RATEPAYERS BEAR THE FULL BURDEN OF THIS COST?

A. Yes. APS has included the ACC jurisdictional amount which is [BEGIN CONFIDENTIAL] [END CONFIDENTIAL]

1 **Q. WHAT IS RUCO'S RECOMMENDATION?**

2 A. RUCO recommends a 50/50 sharing between ratepayers and shareholders, since
3 D&O Liability Insurance not only benefits ratepayers, but also shareholders.
4 Shareholders benefit from insurance coverage in litigation cases brought against
5 the Company's Directors and Officers. Shareholders would also benefit from
6 payments under this policy which may not be recoverable from ratepayers.
7 Similarly, it can be argued that ratepayers benefit, since the Company can attract
8 and retain directors and officers, and provides them with some degree of freedom
9 from personal liability. Therefore, it is reasonable for shareholders to bear a portion
10 of the cost for the D&O liability insurance. [BEGIN CONFIDENTIAL] [END
11 CONFIDENTIAL]

12
13 **Q. HAS THE COMPANY ASKED RATEPAYERS TO FUND THE FULL BURDEN OF**
14 **EEI DUES?**

15 A. No, of the total expense of \$1,188,411 in expenses for this line item the Company
16 has recorded \$211,748 for lobbying expense below the line. They also recorded
17 EEI donations of \$30,000 below the line as well. They are asking ratepayers to pay
18 the remainder which include \$720,274 of EEI membership dues, \$185,889 of Utility
19 Air Regulatory Group ("UARG") and \$40,500 for Utility Solid Waste Activities Group
20 ("USWAG") (See Attachment FWR-3). This results in a rate request of \$946,663.

1 **Q. WHOSE INTEREST DOES THE UARG AND THE USWAG GROUPS**
2 **REPRESENT?**

3 A. These groups represent the interest of electric generators such as APS, TEP and
4 UNS donations and membership is purely voluntary, many of which are political in
5 nature, and may not be necessary for the provision of utility services.

6
7 **Q. WHAT HAS THE COMMISSION RECOMMENDED IN PRIOR DECISIONS?**

8 A. The Commission recommended a reduction in EEI dues of 49.93 percent in
9 Decision No. 71914 and 70860.

10
11 **Q. HOW WAS THIS PERCENTAGE DETERMINED?**

12 A. The percentage was determined using the following NARUC Operating Expense
13 Categories:⁶

<u>NARUC Operating Expense Categories</u>	<u>Percentage of Dues</u>
Legislative Advocacy	20.38%
Regulatory Advocacy	16.49%
Advertising	1.67%
Marketing	3.68%
<u>Public Relations</u>	<u>7.71%</u>
Total Expenses	49.93%

21
22
23
24 ⁶ Based on the Edison Electric Institute Schedule of Expenses by NARUC Category For Core Dues
Activities for the Year Ended December 31, 2005.

1 **Q. HAS RUCO UPDATED THIS INFORMATION FROM EEI?**

2 A. Unfortunately RUCO cannot. After 2006, the EEI stopped providing this information.
3 RUCO believes after a series of regulatory partial disallowances of EEI dues by
4 Commissions across the nation, EEI decided not to provide this information to
5 NARUC, which it had previously done for at least a decade.
6

7 **Q. SO IN OTHER WORDS, THE LETTER THE COMPANY RECEIVED FROM EEI**
8 **ONLY ADDRESSES ONE EXPENSE CATEGORY- LEGISLATIVE ADVOCACY?**

9 A. Yes. The letter provides no information on the other eight expense categories. It
10 only makes sense that most of these costs have been shifted elsewhere, but RUCO
11 does not know because EEI does not supply an expense report anymore that has
12 these details.
13

14 **Q. WHAT IS RUCO'S RECOMMENDATION?**

15 A. RUCO recommends a disallowance of 50 percent of these categories. In summary,
16 RUCO recommends an additional disallowance of EEI dues in the amount of
17 \$472,669, as shown in Schedule FWR-5.
18

19 **DEFERRAL MECHANISMS**

20 **Q. WHAT IS THE COMPANY SEEKING WITH RESPECT TO DEFERRAL**
21 **REQUESTS AND ITS ADJUSTOR MECHANISMS?**

22 A. The Company is asking for several things so let me take them one at a time. First,
23 APS is constructing and will place into service a modernized Ocotillo Generating
24 Facility known as the Ocotillo Modernization Project ("OMP") (See Snook Direct at

10). The OMP involves retiring 220 MWs of existing steam generation and replacing them with 510 MW of state-of-the-art combustion turbine generation (Ibid). New Ocotillo Units 6 and 7 will go into service in the fall of 2018, and Units 3, 4, and 5 will go into service in the spring of 2019 (Ibid). APS estimates that the total direct construction cost of the OMP will be approximately \$500 million (Ibid). In this filing, APS requests permission to defer for potential future recovery, until APS' next general rate case, non-fuel costs of owning, operating and maintaining the OMP. Mr. Snook states that because of the timing of the project without a deferral, APS would be faced with incurring significant financial obligations without rate relief. This would potentially force APS to file a rate case almost immediately after this rate case concludes, potentially causing APS' rates to increase sooner than they would otherwise need to.

Q. PLEASE CONTINUE

A. The second deferral request relates to the Four Corners plant. To comply with federal environmental standards, APS must install selective catalytic reduction equipment, or SCRs, at its Four Corners Generating Facility (See Snook Direct at 14). Mr. Snook states that this equipment will significantly reduce fossil emissions of nitrogen oxides, while permitting APS to continue supplying its customers with inexpensive fossil base load generation (Ibid). The first SCR will be installed on Four Corners Unit 5 and placed in service in late 2017 and the second SCR will be installed on Four Corners Unit 4 and placed in service in Spring 2018 (Ibid). APS estimates the direct construction cost for the SCRs to be approximately \$400 million and if it is not granted a deferral and step increase, APS would need to file an

1 immediate "pancakes" rate case to recover the costs associated with the SCR
2 project (Ibid). For this deferral, APS would defer the costs and then have a step
3 increase to recover the deferral that would take effect in January 2019, and rates
4 established in this proceeding would be adjusted upward at that time to reflect the
5 addition of the SCR deferral and project costs to the revenue requirement (Ibid at
6 14-15).

7
8 **Q. PLEASE CONTINUE.**

9 A. The third deferral request relates to property taxes. As explained by Company
10 Witness Blankenship, APS believes that the property tax deferral approved in the
11 last Settlement was very beneficial and helped to alleviate risk of changes in
12 property tax rates within Arizona (See Blankenship Direct at 43). As she explains,
13 APS is concerned that its property tax rate and related property tax expense could
14 increase significantly during the course of the Settlement stay-out period, much like
15 it has over the past few years and APS proposes to continue the Arizona property
16 tax deferral that was authorized in the last rate case (Ibid).

17
18 **Q. WHAT PROPOSED CHANGES TO ADJUSTOR MECHANISMS.**

19 A. APS is proposing a variety of changes to its adjustor mechanisms many of which
20 are just administrative (the effective date of the LFCR) or minor from a technical and
21 ratemaking point of view (inclusion of chemical costs in the PSA), but the Company
22 is proposing two significant changes to the LFCR. Here, the Company is also
23 proposing to increase the year over year cap to 2% and to include 100% of
24 transmission, distribution and generation costs collected through energy charges

1 and 50% of transmission, distribution and generation costs collected through
2 demand charges (See Snook direct at 36). Currently, no generation charges are
3 collected through the LFCR.
4

5 **Q. PLEASE COMMENT ON THE COMPANY'S PROPOSALS.**

6 A. Let me comment on the proposed changes to the LFCR. Here, the Company is
7 proposing exactly what was proposed by UNS Electric in its recent rate case and
8 the Commission has already ruled on the issue. In that case, the Utility did not meet
9 its burden to show that its proposed changes to the LFCR mechanism are in the
10 public interest (Decision 75697 at 126). As the Commission further elaborated, the
11 LFCR mechanism is not intended to operate as a full de-coupler mechanism, but
12 rather to collect the lost fixed cost revenues associated with Commission-mandated
13 programs such as Energy Efficiency and DG (Ibid). I believe APS adds nothing to
14 what the Commission has already heard and its proposed changes should be
15 rejected.
16

17 With respect to the deferral mechanism for the expenditures at the Four Corners
18 plant, the request for a step increase in rates provides no benefit to ratepayers at
19 all. In fact, as designed the mechanism is simply cost plus regulation to enhance
20 the Company's financial standing. On this basis alone the proposal should be
21 rejected.
22

23 With respect to the Ocotillo and property tax deferrals, the Company's filing is
24 essentially seeking a continuation of the terms of the previous settlement which

1 gave the Utility enhanced cash flow and strengthened its balance sheet. In return
2 for all these advantages to the Utility, the Company was able to cut costs and
3 remain out of the rate case environment for five years instead of the four that was
4 mandated by the settlement. In this case, however, the Company does not offer
5 anything to ratepayers for the requested financial protections. In the last case, it
6 agreed to reduce its requested return on equity by 100 basis points, not to file a rate
7 case for four years (thereby encouraging the Utility to control costs) and no base
8 rate increase. Here the Utility seeks a 10.5% return on equity (50 basis points
9 higher than agreed to last time), no stay out provision and a 15% rate increase
10 which equates to a 2.8% per annum increase since the last rate case and well
11 above the 1.5% per annum increase in the CPI over the last five years. This last
12 point is particularly important, as one needs to openly realize that the adjustor
13 mechanisms act as automatic rate increases, which tend to phase the increase in
14 over time and not eliminate them. Now, the Company seeks to further strengthen
15 its balance sheet and cash flows, but gives no assurance that it will not file for a rate
16 increase in the near future. In sum, the filing as presented offers ratepayers less
17 than what they had under the previous settlement and therefore many of the
18 aspects the Company seeks should not be allowed to be put in place as they should
19 be part of a balanced multi-year rate plan that gives something to both ratepayers
20 and the Utility.

21
22 Moreover, even if the Utility were offering a long term rate plan, with the changing
23 aspects of power delivery, due to the impact of the introduction of LED lights and
24 the phase out of incandescent bulbs, roof top solar, the closure of coal plants, and

1 advances in wind, long term rate plans may not be an attractive option for either
2 ratepayers or the Utility.

3
4 Based on the discussion above, I recommend rejection of all proposed deferral
5 mechanism and the modifications to the LFCR.

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7 **Q. DOES THIS CONCLUDE YOUR TESTIMONY AT THIS TIME?**

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A. Yes, it does.

Attachment FWR-1 – Resume of Frank Radigan

FRANK W. RADIGAN

EDUCATION

B.S., Chemical Engineering -- Clarkson University, Potsdam, New York (1981)

Certificate in Regulatory Economics -- State University of New York at Albany (1990)

SUMMARY OF PROFESSIONAL EXPERIENCE

1998–Present Principal, Hudson River Energy Group, Albany, NY -- Provide research, technical evaluation, due diligence, reporting, and expert witness testimony on electric, steam, gas and water utilities. Provide expertise in electric supply planning, economics, regulation, wholesale supply and industry restructuring issues. Perform analysis of rate adequacy, rate unbundling, cost-of-service studies, rate design, rate structure and multi-year rate agreements. Perform depreciation studies, conservation studies and proposes feasible conservation programs.

1997–1998 Manager Energy Planning, Louis Berger & Associates, Albany, NY – Advised clients on rate setting, rate design, rate unbundling and performance based ratemaking. Served a wide variety of clients in dealing with complexities of deregulation and restructuring, including OATT pricing, resource adequacy, asset valuation in divestiture auctions, transmission planning policies and power supply.

1981–1997 Senior Valuation Engineer, New York State Public Service Commission, Albany, NY – Starting as a Junior Engineer and working progressively through the ranks, served on the Staff of the New York State Department of Public Service in the Rates and System Planning Sections of the Power Division and in the Rates Section of the Gas and Water Division. Responsibilities included the analysis of rates, rate design and tariffs of electric, gas, water and steam utilities in the State and performing embedded and marginal cost of service studies. Before leaving the Commission, was responsible for directing all engineering staff during major rate proceedings.

FIELDS OF SPECIALIZATION

Electric power restructuring, wholesale and retail wheeling rates, analysis of load pockets and market power, divestiture, generation planning, power supply agreements and expert witness testimony, retail access, cost of service studies, rate unbundling, rate design and depreciation studies.

PROJECT HIGHLIGHTS

Wholesale Commodity Markets

Transmission Expansion Planning – Various Utilities -- Member of Transmission Expansion Advisory Committee in the New England Power Pool – the Committee is charged with the study of transmission expansion needs in the deregulated New England electric market. Ongoing

Locational Based Pricing – Reading Municipal Light Department -- Using GE multi-area production simulation model (MAPS), analyzed New England wholesale power market to cost differences between various generators and load centers. 2003

Merchant Plant Analysis – Confidential client – Using GE multi-area production simulation model (MAPS), analyzed New York City wholesale power market to determine economics of restructuring PURPA era contract to market priced contract. 2002

Market Price Forecasting – El Paso Merchant Energy – Analyzed New England power market using MAPS for purpose of pricing natural gas supply in order to ensure that plant was dispatched at 70% capacity factor as required under its gas supply contract. 2002

Market Price Analysis – Novo Windpower – Analyzed hourly market price data in New York for each load zone in State in order to optimize location of new wind power projects. 2002

Gas Aggregation – Village of Ilion – Advised client on costs/benefits of aggregating residential gas customers for purpose of gas purchasing. 2002

Gas Procurement – Albany County, New York – Assisted client in analysis of economics of existing gas purchase contract; negotiated termination of contract; designing request for proposal for new natural gas supply. 2000

HQ Prudence Review – Selected by Vermont Public Service Board to perform prudence review power supply contract between Hydro Quebec and Central Vermont Public Service Corporation. 1998

Wholesale Power Supply – Prepared comprehensive RFP to optimize power supply for Solvay municipal utility by complementing existing low cost power supplies in order to entice new industrial load to locate within Village. 1997

Analysis of Load Pockets and Market Power – Performed analysis of load pockets and market power in New York State; determined physical and financial measures that could mitigate market power. 1996

Study of IPP Contracts and Impacts in New York – Performed study to determine rate impacts of power purchase contracts entered into by investor owned utilities and independent power producers (IPPs); separately measured rate impacts resulting from statewide excess-capacity; determined level of non-optimal reserves for each utility. 1995

Power Purchase Contract Policies and Procedures – Directed NYSPSC Staff teams in formulation of short- and long-run avoided cost estimates (LRACs) using production simulation model (PROMOD); forecasted load and capacity requirements; developed utility buy-back rates; presented expert witness testimony on buy-back rate estimates and calculation methodologies, thereby implementing curtailment of IPPs as allowed under PURPA. 1990-1994

Integrated Resource Planning – Led NYSPSC Staff team's examination of each utility's IRP process and examination of impacts of processes and regulatory policies influencing the decision making process. 1994

Intrastate Wheeling Commission Transmission Analysis and Assessment – Chairman of NYSPSC Proceeding to examine plans for meeting future electricity needs in New York State. Addressed measures for estimating and allocating costs of wheeling, including embedded cost, short-run marginal cost and long run incremental cost methods. 1990

Rate Setting

Rate Setting – Dover Plains Water Company – Case 14-W-0378 -- Prepared rate filing before the New York Public Service Commission for the Dover Plains Water Company to increase its annual water revenues. 2014

Rate Setting – Village of Castile – Case No. 14-E-0358 – Prepared rate filing before the New York Public Service Commission for the Village of Castile Electric Department to increase its annual electric revenues. 2014

Depreciation Study – Village of Swanton – On behalf of the Village of Swanton, Vt. Electric Department prepared a depreciation study for use in setting new depreciation rates to be submitted to the Vermont Public Service Board. 2014

Rate Setting – Village of Hamilton – Case 13-G-0584 – On behalf of the Village of Hamilton, NY designed initial rates for new municipal gas utility. 2013

Rate Setting – Fillmore Gas Company - Case No. 13-G-0039 - Prepared rate filing before the New York Public Service Commission for the Fillmore Gas Company to increase its annual gas revenues. 2013

Rate Setting – Alliance Energy - Case No. 12-G-0256 - Prepared rate filing before the New York Public Service Commission for the Alliance Energy Transmission, LLC to increase its annual gas transportation. 2012

Rate Study – Atmos Energy – Docket No. 11-UN-184 – On behalf of the Mississippi Public Service Commission, submitted report on reasonableness of Company's depreciation study. 2012

Rate Study – Entergy Mississippi – Docket No. 11-UA-83 -- On behalf of the Mississippi Public Service Commission, prepared report on the reasonableness of Entergy Mississippi's depreciation study. 2012

Rate Case Cost of Service Study – Mississippi Power Company – On behalf of the Mississippi Public Service Commission, prepared report on reasonableness of embedded cost of service study submitted by Mississippi Power Co. 2012

Rate Case Cost of Service Study – Boonville, NY – Prepared class load study and embedded cost of service study to justify change in rate design for the purpose of conserving energy. 2010-2012

Rate Setting – Alliance Energy Transmission - Case No. 12-G-0256 – Prepared rate filing before the New York Public Service Commission for Alliance Energy Transmission. 2012

Rate Setting – Hamilton, NY - Case No. 12-E-0286 - Prepared rate filing before the New York Public Service Commission for the Village of Hamilton, NY to increase its annual electric revenues. 2012

Rate Setting – Fairport, NY – Case No. 11-E-0357 - Prepared rate filing before the New York Public Service Commission for the Village of Fairport, NY to increase its annual electric revenues. 2011

Jurisdictional Cost of Service – Mississippi Power Company – On behalf of the Staff of the Mississippi Public Utilities Staff prepared a report on the reasonableness of the Company's jurisdictional cost of service study. 2010

Rate Analysis – Southwestern Power Company – On behalf of a coalition of retail customers analyzed reasonableness of utility's request to include the costs of Construction Work In Progress Expenditures in rates for a power plant known as the Turk Plant. 2010

Rate Study – Stowe Electric Department, VT – Docket No. 8169 – For small municipal electric utility, filed rate case before the Vermont Public Service Board. 2010

Docket No. 10-10-03 – Assisted in the CT OCC's review and development of recommendations for the Review of the 2011 Conservation and Load Management Plan. 2010

Rate Setting – Endicott, NY - Case No. 10-E-0588 – Prepared rate filing before the New York Public Service Commission for the Village of Endicott, NY to increase its annual electric revenues. 2010

Rate Case Cost of Service Study – Heritage Hills Water Works – For small water company, performing cost of service study for the preparation of a full cost of service study before the New York Public Service Commission. 2009

Rate Case Cost of Service Study – Stowe Electric Department, NY – For small municipal electric utility, assisted in the preparation full cost of service study before the Vermont Public Service Board. 2009

Rate Setting Training – MMWEC – Assisted in training MMWEC staff on rate setting process so that they could provide service to members. 2009

Rate Setting – Connecticut Natural Gas -- Docket No. 08-12-06 - Assisted the Connecticut Office of Consumer Counsel on the analysis of the reasonableness of the of the Company's proposed revenue requirement. 2009

Rate Filing – Heritage Hills Water Works – Case No. 08-W-1201 – Prepared rate filing before the New York PSC for the Heritage Hills Water Works Corporation to increase its annual water revenues. 2008

Rate Study – Hudson River Black River Regulating District -- For regulating body performed detailed cost of service allocation in order to allocate costs among beneficiaries of water regulation. 2008

Rate Case Cost of Service Study – Village of Greene, NY – For small municipal electric utility, assisted in the preparation full cost of service study before the New York Public Service Commission. 2008

Rate Case Cost of Service Study – Village of Bath, NY – For small municipal electric utility, assisted in the preparation full cost of service study before the New York Public Service Commission. 2008

Rate Case Cost of Service Study – Village of Richmondville, NY – For small municipal electric utility, assisted in the preparation full cost of service study before the New York Public Service Commission. 2008

Economic Development Rate – Massena Electric Department – For municipal electric utility, developed tariffs for economic development rates for new or expanded load.

Rate Case Cost of Service Study – Village of Hamilton, NY – For small municipal electric utility, prepared full cost of service study before the New York Public Service Commission. 2004

Rate Study – Pascoag Utility District – Reviewed the application of the Power Authority of the State of New York to increase rates to its wholesale power customers. 2003

Rate Study - Kennebunk Power and Light Department – Performed rate study of new multi-year wholesale power contract against existing rates to determine impact on overall revenue recovery and cash flows of utility. 2003

Rate Case Cost of Service Study – Village of Arcade, NY – For small municipal electric utility, assisted in the preparation full cost of service study before the New York Public Service Commission. 2003

Rate Case Cost of Service Study – Village of Philadelphia, NY – For small municipal electric utility, assisted in the preparation full cost of service study before the New York Public Service Commission. 2003

Rate Case Cost of Service Study – Village of Hamilton, NY – For small municipal electric utility, prepared full cost of service study before the New York Public Service Commission. 2004

Rate Case Cost of Service Study – Fillmore Gas Company – For small natural gas local distribution company, performing cost of service study for internal budget controls and formal rate case before the New York Public Service Commission. 2003

Rate Case Cost of Service Study – Rowlands Hollow Water Works – For small water company, performing cost of service study for internal budget controls and formal rate case before the New York Public Service Commission. 2003

Standby Rates – Independent Power Producers of New York – Analyzed reasonableness of proposed standby rates of Niagara Mohawk Power Corporation; proposed alternate rate designs; participated in settlement negotiations for new rates. 2002

Economic Development Rates – Pascoag Utility District – Designed new cost based economic development rates charged to large industrial customer contemplating locating within the municipality. 2002

Municipalization Study – Kennebunk Power and Light Department – Performed economic analysis of municipal utility serving remaining portions of Village not already served; performed valuation of the plant currently owned by Central Maine Power. 2001

Water Rate Study – Pascoag Utility District – Performed cost of service study for water utility; presented alternate methods of funding revenue requirement. 2001

Pole Attachment Rates – Middleborough Gas and Electric Department – Designed cost based pole attachment rates charged to CATV customers. 2000

ISO Service Tariff -- On behalf of three municipal utilities, analyzed cost basis and proposed rate design of ISO Service Tariffs. 2000

Pole Attachment Rates – City of Farmington, New Mexico municipal electric department – Designed cost based pole attachment rates for CATV customers. 1999

OATT Rates – On behalf of four municipal utilities in New England – Developed cost based annual revenue requirements for regional network transmission rates; represent utilities before ISO New England committees on transmission rate setting issues. 1998-2004

Consolidated Edison Restructuring – Member NYPSC Staff team – Negotiated major restructuring settlement with Consolidated Edison, which decreased utility's rates by \$700 million over five years; implemented retail access program; performed rate unbundling; divestiture of utility generation and the allowance of the formation of a holding company; accelerated depreciation of generation; established customer education programs on restructuring; established service quality and service reliability incentive to ensure that provision of electric service will diminish as competitive market emerges. The agreement served as the template for restructuring in New York. 1997

Cost-of-service Review and Rate Unbundling – Performed rate unbundling of retail rates of Orange & Rockland Utilities, Inc. to facilitate delivery of New York Power Authority energy to customer located in Orange & Rockland's service territory. 1992

Vintage Year Salvage and Study - Managed joint study of staff from Rochester Gas and Electric Corporation and NYSPSC to determine feasibility of using vintage year salvage accounting for determining future salvage rates. 1985

Environmental Issues

Energy Conservation Study – Pascoag Utility District – Designed energy conservation rebate program based on cost benefit study of various alternatives. Program funded through State mandated collection of energy conservation monies from ratepayers. 2002

Clean Air Act Lawsuit – New York State Attorney General – Investigated modifications made at coal fired generating units of New York utilities to determine whether major modifications were made with obtaining pre-construction permits as required by the prevention of Significant Deterioration (PSD) provisions of the Act. 1999-2002.

Environmental Impact Study and Simulation Modeling Analysis – Analyzed potential environmental impacts of restructuring electric industry in NY using production simulation model PROMOD. 1996

Renewable Resources – Project Leader in NYSPSC proceeding regarding development and implementation of utility plans to promote use of renewable resources. 1995

Environmental and Economic Impacts Study – Directed study of pool-wide power plant dispatch with environmental adders to determine environmental and economic effects of dispatching electric power plants with monetized environmental adders. 1994

Clean Air Impact Study – Directed study of effects of the Clean Air Act of 1990. Measured statewide cost savings if catalytic reductions control facilities were elected to comply with 1990 Clean Air Act Amendments; installed components on units in metropolitan NY region. 1994

Environmental Externalities and Socioeconomic Impacts Study – Managed NYSPSC proceeding to determine whether to incorporate environmental costs into Long-Run Avoided Costs for the State's electric utilities. Study

purposes: explore the socioeconomic impacts of electric production as compared with DSM; monetize environmental impacts of electricity. 1993

EXPERT WITNESS TESTIMONY

Case 9344 – Green Ridge Utilities – On behalf of Maryland Office of People's Counsel testified on the reasonableness of the water utility's proposed revenue requirement. 2014

FC 1115 – Washington Gas Light -- On behalf of the People's Counsel of the District of Columbia, testified on the reasonableness of the Company's proposal for the recovery of costs and funding aspects of Washington Gas Light Company's Revised Accelerated Pipe Replacement Plan. 2014

Case No. EC-123-0082-00 – Entergy Mississippi – On behalf of Mississippi Public Utilities Staff reviewed and testified on the reasonableness of Entergy Mississippi, Inc.'s proposed depreciation rates and cost of service study. 2014

Case 9345 – Maryland Water Services – On behalf of Maryland Office of People's Counsel testified on the reasonableness of the water utility's proposed revenue requirement. 2014

Case No. 2013-00167 – Columbia Gas of Kentucky – On behalf of the Office of Rate Intervention of the Attorney General for the Commonwealth of Kentucky testified on the reasonableness of the Company proposed rate increase. 2013

Docket 13-G-1301 – Consolidated Edison – On behalf of US Power Generating Company testified on the reasonableness of proposed modifications to natural gas balancing services. 2013

Docket No. 13-01-09 – United Illuminating – On behalf of the Connecticut Office of Consumer's Counsel examined the reasonableness of the Company's proposed construction budget. 2013

Case U-17169 - Semco Energy - On behalf of the Michigan Department of Attorney General testified on the reasonableness of the Company's proposal to modify its accelerated main replacement form for gas distribution facilities. 2013

Docket No. 13-06003 – Sierra Power Company - On behalf of the Nevada Public Service Commission, testified on the reasonableness of Company's proposed depreciation rates. 2013.

Docket No. E-01 933A-I 2-0291 – Tucson Electric Power -- On behalf of the on behalf of the Arizona Residential Utility Consumer Office examined the reasonableness of the Company's rate increase. 2012

Case No. FC 1093 - Washington Gas and Light – On behalf of the People's Counsel of the District of Columbia, testified on the reasonableness of the Company's proposal to replace and/or remediate certain gas distribution facilities that are subject of this case, 2012.

Docket No. C-2011-2226096 — Pennsylvania American Water Co. - In a class-action lawsuit, testified before the PA PUC on behalf of C. Leslie Pettko on the reasonableness of the surcharges imposed by Pennsylvania American Water Company. 2012

Docket No. 11-06007 – Nevada Power Company – On behalf of the Nevada Public Service Commission, testified on the reasonableness of the Company electric depreciation study on Nevada Power Co. 2011

MEUA –On behalf of the Municipal Electric Utilities Association, filed testimony with the New York Power Authority (NYPA) on the reasonableness of the Authority's 2011 Rate Modification Plan for the Niagara Power Project. 2011

Case No. 9283 – Green Ridge Utilities, Inc. – On behalf of Maryland Office of People's Counsel testified on the

reasonableness of the water utility's proposed revenue requirement. 2011

Case No. 11-G-0280 – Corning Natural Gas -- On behalf of the Village of Bath, NY, analyzed the construction program, revenue requirement, and rate design proposed by the gas distribution company serving the Village. 2011

Case No. 10-G-0598 – Bath Electric Gas and Water Systems - Testified as to the reasonableness of the Village of Bath's request for a refund relating to overcharges for gas purchased from the Corning Natural Gas Co. 2011

Case No. U-16472 – Detroit Edison -- On behalf of four large hospitals – Detroit Medical Center, Henry Ford Health Systems, William Beaumont Hospital, and Trinity Health Michigan – testified on the reasonableness of the continuation of a service class for large customers with special contracts. 2011

Case No. 9252 – Artesian Water Maryland, Inc. - On behalf of the Maryland Office of People's Counsel, analyzed proposed revenue requirement of Artesian Water Maryland, Inc. 2011.

Case No. 10-E-0362 – Orange and Rockland Utilities, Inc. - On behalf of a coalition of municipalities, testified on the reasonableness of the proposed revenue requirement of Company. 2010.

Docket No. 05-10-RE04 – Connecticut Light and Power Co. – On behalf of the Connecticut Office of Consumer Counsel, testified on the reasonableness of the assist in its review of the application of Company for approval of full deployment of its Advance Metering Infrastructure ("AMI"). 2010

Docket Nos. 10-06003 and 10-06004 – Sierra Power Company - On behalf of the Nevada Public Service Commission, testified on the reasonableness of Company's proposed depreciation rates. 2010.

Case No. 10-E-0050 – Niagara Mohawk Power Corporation -- On behalf of a coalition of municipalities, testified on the reasonableness of utility's proposal to eliminate contracts to provide street lighting service. 2010

Case No. 9248 – Maryland Water Services - On behalf of the Maryland Office of the People's Counsel, testified on the reasonableness of the proposed revenue requirement of Maryland Water Services, Inc. 2011

Docket No. 10-12-02 – Yankee Gas Services Company -- On behalf of the Connecticut Office of Consumer Counsel, testified on the reasonableness of the Company's proposed depreciation rates. 2010

Case 09-E-0715 – New York State Electric and Gas Corporation -- On behalf of Nucor Steel, Auburn, Inc. examined the reasonableness of the utility's proposed construction program, revenue allocation, rate design and decoupling mechanism. 2010

Case 09-S-0029 – Consolidated Edison – On behalf of the County of Westchester testified to the reasonableness of a Report Regarding Steam Price Elasticity and Long Term Steam Revenue Requirement Forecast 2010

Docket No. 09-01299 – Utilities, Inc. of Central Nevada - On behalf of the Nevada Attorney General's Bureau of Consumer Protection testified on the overall revenue requirement, the appropriate level of rate case expense, and allocation of corporate salaries. 2010

Docket No. 09-12-11 – Connecticut Water Company – On behalf of the Connecticut Office of Consumer's Counsel examined the reasonableness of the proposed Water Conservation Adjustment Mechanism. 2010

Case 9217 – Potomac Electric Power Company – On behalf of the Maryland Office of People's Counsel examined the reasonableness of the utility's proposed jurisdictional cost of service study, revenue allocation and rate design. 2010

Docket No. 09-12-05 – Connecticut Light & Power Company – On behalf of the Connecticut Office of Consumer's Counsel examined the reasonableness of the proposed depreciation rates, revenue allocation and rate design. 2010

Case 09-S-0794 – Consolidated Edison – Steam Rates -- On behalf of County of Westchester testified to the

reasonableness of the Company's proposal to increase retail rates. 2010

Case 09-G-0795 – Consolidated Edison – Gas Rates -- On behalf of County of Westchester testified to the reasonableness of the Company's proposal to increase retail rates. 2010

Case 10-S-0001 – Project Orange Associates, LLC -- On behalf of Project Orange Associates testified to the reasonableness of whether the steam customers of Syracuse University could benefit if a steam transportation tariff were adopted by the New York Public Service Commission. 2009

Docket No. E-7, Sub 900 – Duke Energy Carolinas, LLC – On behalf of the Sierra Club, Southern Alliance for Clean Energy testified on the reasonableness of the Company's request to recover construction work in progress in rate base and to comment on whether the costs incurred by the Company for the supercritical coal plant Cliffside Unit 6 are reasonable and prudent. 2009

D.P.U. 8-64 – New England Gas Company – On behalf of the Massachusetts Attorney General testified to the reasonableness of the accuracy of the Company's accounting data as it related to affiliate transaction with the parent Company. 2009

Formal Case No. 1027 – Washington Gas Light Company – On behalf of the Office of People's Counsel of the District of Columbia testified to the reasonableness of the Company's use of mechanical couplings and problems related thereto. 2009

Docket No. G-04204A-08-0571 -- UNS Gas, INC. -- On behalf of the on behalf of the Arizona Residential Utility Consumer Office examined the reasonableness of the Company's embedded cost of service study, proposed revenue allocation, and proposed rate design. 2009

Case 09-S-0029 – Consolidated Edison – On behalf of the County of Westchester testified to the reasonableness of the method of allocating costs between the utility's steam system and its electric system. 2009

Docket No. 09-0407 – Commonwealth Edison – On behalf of the People of the State of Illinois testified to the reasonableness of Company's Chicago Area smart Grid Initiative. 2009

Docket No. E-01345A-08-0172 – Arizona Public Service – On behalf of the on behalf of the Arizona Corporation Commission examined the reasonableness of the Company's embedded cost of service study, proposed revenue allocation, proposed rate design and proposal regarding demand side management cost recovery. 2009

Case 9182 – Maryland Water Service, Inc. – On behalf of the Maryland Office of People's Counsel examined the reasonableness of the utility's proposed bulk purchased water rate increase. 2009

Case 9182 – Artesian Water Maryland, Inc. – On behalf of the Maryland Office of People's Counsel examined the reasonableness of the utility's proposed advance fees to connect new water customers in the Whitaker Woods subdivision. 2009

Case 08-E-0539 – Consolidated Edison – Electric Rates -- On behalf of County of Westchester testified to the reasonableness of the Company's proposal to increase retail electric rates by \$854 million. 2008

Docket No. 08-07-04 – United Illuminating – On behalf of the Connecticut Office of Consumer's Counsel examined the reasonableness of the Company's proposed construction budget. 2008

Docket No. 08-06036 – Spring Creek Utilities - On behalf of the Nevada Attorney General's Bureau of Consumer Protection testified on the overall revenue requirement, the cost allocation and amortization of a new financial accounting system, the appropriate level of rate case expense, allocation of corporate salaries, recovery of property taxes, and rate design. 2008

D.P.U. 8-35 – New England Gas Company – On behalf of the Massachusetts Attorney General testified to the reasonableness of the Company's request to increase rates in light of the terms of a previous settlement, the level of

expenses being charged from the parent Company to the affiliate, the proposed increase in depreciation expense and the proposed revenue allocation and rate design. 2008

Docket No. 08-96 – Artesian Water Company - on behalf of the Staff of the Delaware Public Service Commission examined the reasonableness of the Company's cost of service study and proposed revenue allocation and rate design. 2008

Docket No. 05-03-17PH02 – Southern Connecticut Gas Company – on behalf of the Connecticut Office of Consumer's Counsel examined the reasonableness of the Company's embedded costs of service study and proposed revenue allocation and rate design. 2008

Docket No. 06-03-04PH02 – Connecticut Natural Gas Corporation – on behalf of the Connecticut Office of Consumer's Counsel examined the reasonableness of the Company's embedded cost of service study and proposed revenue allocation and rate design. 2008

Docket No. G-01551A-07-0504 – Southwest Gas Corporation – on behalf of the Arizona Corporation Commission examined the reasonableness of the Company's embedded cost of service study, proposed revenue allocation, proposed rate design and proposals regarding revenue decoupling. 2008

Docket No. E-01933A-07-0402 – Tucson Electric Power Company – on behalf of the Arizona Corporation Commission examined the reasonableness of the Company's embedded cost of service study, proposed revenue allocation, proposed rate design and proposals regarding mandatory time of use rates. 2008

Docket No. 07-09030 – Southwest Gas Corporation – on behalf of the Staff of the Nevada Public Utilities Commission testified on the reasonableness of the utility's proposed depreciation rates. 2008

Civil Action 05-C-457-1 – Dominion Hope – on behalf of former employee of the utility examined the utility's hedging and sales for resale practices between affiliates. 2008

Case 07-829-GA-AIR – Dominion East Ohio – on behalf of the Office of the Ohio Consumer's Counsel examined the reasonableness of the Company's embedded cost of service study, proposed revenue allocation and rate design and examined the reasonableness of proposals on revenue decoupling and straight fixed variable rate design. 2008

Case 07-S-1315 – Consolidated Edison Steam Rates -- On behalf of County of Westchester testified to the reasonableness of the method of allocating costs between the utility's steam system and its electric system. 2008

Case No. 9134 – Green Ridge Utilities, Inc. – on behalf of the Maryland Office of People's Counsel examined the reasonableness of the utility's proposed rate application including the appropriate cost allocation and amortization period for expenses incurred to develop and implement Project Phoenix (a new software and financial accounting system project), the appropriate level of rate case expense, the requested rate of return and the appropriate level and allocation for common expenses from the parent company. 2008

Case No. 9135 -- Provinces Utilities, Inc. – on behalf of the Maryland Office of People's Counsel examined the reasonableness of the utility's proposed rate application including the appropriate cost allocation and amortization period for expenses incurred to develop and implement Project Phoenix (a new software and financial accounting system project), the appropriate level of rate case expense, the requested rate of return and the appropriate level and allocation for common expenses from the parent company. 2008

Case 07-M-0906 – Energy East and Iberdrola – On behalf of Nucor Steel, Auburn, Inc. examined the reasonableness of the proposed Acquisition of Energy East Corporation by Iberdrola merger. 2008

Case 07-E-0523 – Consolidated Edison – Electric Rates -- On behalf of County of Westchester testified to the reasonableness of the Company's proposal to increase retail electric rates by over \$1.2 billion or 33%. 2007

Docket Nos. ER07-459-002, ER07-513-002, and EL07-11-002 – Vermont Transco -- on behalf of the Vermont Towns of Stowe and Hardwick, and the Villages of Hyde Park, Johnson and Morrisville on whether the direct

assignment and rate impacts of a proposed transmission line were with current policy of the Federal Energy Regulatory Commission 2007

Docket No. 07-05-19 – Aquarion Water Company – On behalf of the Connecticut Office of Peoples Counsel examined the reasonableness of the utility's proposed revenue allocation, rate design, weather normalization and depreciation rates 2007

Docket No. E-04204A-06-0783 – UNS Electric – On behalf of the Arizona Corporation Commission testified on the reasonableness of the utility's proposed revenue allocation and rate design. 2007

Docket Nos. 06-11022 and 06-11023 – Nevada Power Company – On behalf of the Staff of the Nevada Public Utilities Commission testified on the reasonableness of the utility's proposed depreciation rates and expense levels. 2007

Case 06-G-1186 – KeySpan Delivery Long Island – on behalf of the Counties of Nassau and Suffolk analyzed the Company's proposed rate design for amortization of costs for expenditures relating to Manufactured Gas Plants. 2007

Case 06-M-0878 – National Grid and KeySpan Corporation -- on behalf of the Counties of Nassau and Suffolk analyzed the public benefit of the proposed merger, customer service, demand side management programs, rate relief as it relates to competition and customer choice, the repowering of the existing generating stations on Long Island, and the remediation of contamination caused by Manufactured Gas Plants. 2007

Docket No. 06-07-08 – Connecticut Water Company – On behalf of the Connecticut Department of Utility Control examined the reasonableness of the utility's proposed depreciation rates, revenue allocation and rate design. 2006

Docket No. EL07-11-000 – Vermont Transco -- on behalf of the Vermont Towns of Stowe and Hardwick, and the Villages of Hyde Park, Johnson and Morrisville evaluated whether the proposed and subsequently abandoned allocation of costs for the Lamoille County Project was reasonable and whether the direct assignment and rate impacts of a proposed transmission line were with current policy of the Federal Energy Regulatory Commission. 2006

Case 05-S-1376 – Consolidated Edison – Steam Rates -- On behalf of County of Westchester testified to the reasonableness of the method of allocating costs between the utility's steam system and its electric system. 2006

Docket No. 06-48-000 – Braintree Electric Light Department – On behalf of the municipal utility presented an cost of service study used to calculate the annual revenue requirement for a generating station that was deemed to be required for reliability purposes. 2006

Case 05-E-1222 – New York State Electric and Gas Corporation – On behalf of Nucor Steel, Auburn, Inc. examined the reasonableness of the utility's proposed average service lives, forecast net salvage figures, and proposal to switch from whole life to remaining life method. 2006

Docket No. 05-10004 – Sierra Pacific Power Company – On behalf of the Staff of the Nevada Public Utilities Commission testified on the reasonableness of the utility's proposed electric depreciation rates and expense levels. 2006

Docket No. 05-10006 – Sierra Pacific Power Company – On behalf of the Staff of the Nevada Public Utilities Commission testified on the reasonableness of the utility's proposed gas depreciation rates and expense levels. 2006

Docket No. ER06-17-000 – ISO New England, Inc. – On behalf of a group of municipal utilities in Massachusetts prepared an affidavit on the reasonableness of proposed changes to the Regional Network Service transmission revenue requirements rate setting formula. 2005

Case 04-E-0572 – Consolidated Edison – Electric Rate – On behalf of the County of Westchester testified to the reasonableness of the Company's revenue allocation amongst service classes and the company's fully allocated

embedded cost of service study. 2004

Docket No. 04-02-14 – Aquarion Water Company – On behalf of the Connecticut Department of Utility Control examined the reasonableness of the utility's proposed depreciation rates, weather normalization proposal and certain operation and maintenance expense forecasts. 2004

Docket No. U-13691 – Detroit Thermal, LLC – On behalf of the Henry Ford Health Systems testified on the reasonableness of the utility's proposed default tariffs for steam service. 2004

Docket No. 04-3011 – Southwest Gas Corporation – On behalf of the Staff of the Nevada Public Utilities Commission testified on the reasonableness of the utility's proposed depreciation rates and expense levels. 2004

Docket No. ER03-563-030 -- Devon Power, LLC, *et al.* – On behalf of the Wellesley Municipal Light Plant filed a prepared affidavit with FERC with respect to the proposal of ISO New England, Inc. to establish a locational Installed Capability market in New England. 2004

Docket No. 03-10002 – Nevada Power Company – On behalf of the Staff of the Nevada Public Utilities Commission testified on the reasonableness of the utility's proposed depreciation rates and expense levels. 2004

Case 03-E-0765 – Rochester Gas and Electric Corporation - Before the New York Public Service Commission submitted testimony on rate design, rate unbundling, depreciation, commodity supply and reasonableness and ratemaking treatment of proceeds from the sale of a nuclear generating plant. 2003

New York State Department of Taxation and Finance Versus Brooklyn Navy Yard Cogeneration Partners – Testified on behalf of independent power producer in income tax case regarding tax payments associated with gas used to produce electricity. Testimony focused on ratemaking policies and practices in New York State. 2003

Docket No. 2930 – Narragansett Electric – Before the Rhode Island Public Utilities Commission submitted testimony on the reasonableness of the utility's proposed shared savings filing and its implications for the overall reasonableness of the Company's distribution rates. 2003

Docket No. 03-07-01 – Connecticut Light and Power Company – Before the Connecticut Department of Public Utility Control testified to the recovery of "federally mandated" wholesale power costs. 2003

Docket No. ER03-1274-000 – Boston Edison Company – Before the Federal Energy Regulatory Commission submitted affidavit on the reasonableness of the utility's proposed depreciation rates and expense levels. 2003

Case 210293 – Corning Incorporated – Before the New York Public Service Commission submitted an affidavit on certain actions of New York State Electric & Gas Corporation regarding the wholesale price of power in New York and the utility's billing practices as they relate to flex rate contracts. 2003

Case 332311 – Nucor Steel Auburn, Inc. – Before the New York State Public Service Commission submitted an affidavit on certain actions of New York State Electric & Gas Corporation regarding the wholesale price of power in New York and the utility's billing practices as they relate to flex rate contracts. 2003

Case 6455/03 – Prepared affidavit for consideration by the Supreme Court of the State of New York as to the purpose, need and fuel choice for the Jamaica Bay Energy Center (Jamaica Bay) as it related to good utility planning practice for meeting the energy needs of utility customers. 2003

Case 00-M-0504 – New York State Electric and Gas Corporation – Reviewed reasonableness of utility's fully allocated embedded cost of service study and proposed unbundled delivery rates. 2002

Docket No. TX96-4-001 – On behalf of the Suffolk County Electrical Agency proposed unbundled embedded cost rates for wheeling of wholesale power across distribution facilities. 2002

Case 00-E-1208 – Consolidated Edison: Electric Rate Restructuring – On behalf of Westchester County, addressed

reasonableness of having differentiated delivery services rates for New York City and Westchester. 2001

Case 01-E-0359 – Petition of New York State Electric & Gas – Multi-Year Electric Price Protection Plan – Addressed reasonableness of Price Protection Plan (PPP); presented alternative rate plan that called for 20% decrease in utility's base rates. 2001

Case 01-E-0011 – Joint Petition of Co-Owners of Nine Mile Nuclear Station – Addressed the reasonableness of the proposed nuclear asset sale and the ratemaking treatment of the after gain sale proposed by NYSEG. 2001

Docket No. EL00-62-005 – ISO New England Inc. – Submitted affidavit on reasonableness of ISO's proposed \$4.75/kW/month Installed Capability Deficiency Charge. June 2001

Docket No. EL00-62-005 – ISO New England Inc. – Submitted affidavit on reasonableness of proposed \$0.17/kW/month Installed Capability Deficiency Charge. January 2001

Docket No. 2861 – Pascoag Fire District: Standard Offer, Charge, Transition Charge and Transmission Charge – Testified on elements of individual charges, procedures for calculation and reasons for changes from previous filed rates. 2001

Case 96-E-0891 – New York State Electric & Gas: Retail Access Credit Phase – On behalf of a large industrial customer, testified on cost of service considerations regarding NYSEG's earnings performance under the terms of a multi-year rate plan and the appropriate level of Retail Access Credit for customers seeking alternate service from alternate suppliers. 2000

Docket No. ER99-978-000 – Boston Edison Company: Open Access Transmission Tariff – Testified on design, revenue requirement, and reasonableness of proposed formula rates proposed by Boston Edison Company for calculating charges for local network transmission service under open access tariff. 1999

Docket Nos. OA97-237-000, et. al. – New England Power Pool: OATT – Testified on design, revenue requirement, and reasonableness of proposed formula rate for transmission service; testified to proposed rates, charges, terms and conditions for ancillary services. 1999

Docket No. 2688 – Pascoag Fire District: Electric Rates – Testified on elements of savings resulting from renegotiation of contract with wholesale power supplier and presented analysis that justified need for and amount of base rate increase. 1998

New York State Department of Taxation and Finance Versus Zapco Energy Tactics Corporation – Testified on behalf of independent power producer in income tax case regarding tax payments associated with electric interconnection equipment. Testimony focused on policies and practices faced in doing business in New York State. 1998

Docket No. 2516 – Pascoag Fire District: Utility Restructuring – Testified on manner and means for utility's restructuring in compliance with Rhode Island Utility Restructuring Act of 1996. Testimony presented a methodology for calculating stranded cost charge, unbundled rates, and new terms and conditions of electric services in deregulated environment. 1997

Case 94-E-0334 – Consolidated Edison: Electric Rates – Led Staff team in review of utility's multi-year rate filing seeking increased rates of \$400 million. Directed team in review of resource planning, power purchase contract administration, and fuel and purchased power expenses and testified on reasonableness of company's actions regarding buy-out of contract with an independent power producer and renegotiation of contract with another independent power producer. Lead negotiations for multi-year settlement and performance-based ratemaking package that resulted in a three-year rate freeze. 1994

Case 93-G-0996 – Consolidated Edison: Gas Rates – Testified on reasonableness of utility's proposed depreciation rates. 1994

Case 93-S-0997 – Consolidated Edison: Steam Rates – Testified on reasonableness of utility's resource planning for steam utility system. 1994

Case 93-S-0997 and 93-G-0996 – Consolidated Edison: Steam Rates – Testified on reasonableness of multi-year rate plan proposed by the utility. 1994

Case 94-E-0098 – Niagara Mohawk: Electric Rates – Reviewed utility's management of its portfolio of power purchase contracts with independent power producers for the reasonableness of recovery of costs in retail rates. 1994

Case 93-E-0807 – Consolidated Edison: Electric Rates – Testified on rate recovery mechanism for costs associated with termination of five contracts with independent power producers. 1993

Case 92-E-0814 – Petition for Approval of Curtailment Procedures – Testified on methodology for estimating amount of power required to be curtailed and staff's estimate of curtailment. 1992

Case 90-S-0938 – Consolidated Edison: Steam Rates – Testified on reasonableness of utility's embedded cost of service study, and proposed revenue re-allocation and rate design. 1991

Case 91-E-0462 – Consolidated Edison: Electric Rates – Implementation of partial pass-through fuel adjustment incentive clause. 1991

Case 90-E-0647 – Rochester Gas and Electric: Electric Rates – Analysis and estimation of monthly fuel and purchased power costs for use in utility's performance based partial pass-through fuel adjustment clause. 1990

Case 29433 – Central Hudson Gas and Electric: Electric Rates – Analysis of utility's construction budgeting process, rate year electric plant in service forecast, lease revenue forecast, forecast and rate treatment of profits from sales of wholesale power and estimation of fuel and purchased power expenses for use in the utility's partial pass-through fuel adjustment clause. 1987

Case 29674 – Rochester Gas and Electric: Electric Rates – Review of utility's historic and forecast O&M expenditure levels forecast and rate treatment of profits from wholesale power, and estimation of fuel and purchased power expenses, and price out of incremental revenues from increased retail sales. 1987

Case 29195 – Central Hudson Gas and Electric: Electric Rates – Review of utility's construction budgeting process, analysis of rate year electric plant in service, forecast and rate treatment of profits from sales of wholesale power, and estimation of fuel and purchased power expenses. 1986

Case 29046 – Orange and Rockland Utilities: Electric Rates – Testified on the reasonableness of the utility's proposed depreciation rates and expense levels. 1985

Case 28313 – Central Hudson Gas and Electric: Electric Rates – Review of utility's construction budgeting process; analysis of rate year electric plant in service forecast; review of rate year operations and maintenance expense forecast; forecast and rate treatment of profits from sales of wholesale power; estimation of fuel and purchased power expenses. 1984

Case 28316 – Rochester Gas and Electric: Steam Rates – Price out of steam sales including the review of historic sales growth, usage patterns and forecast number of customers. 1984

PRESENTATIONS

National Association of State Utility Consumer Advocates Annual Conference, 2012 – Speaker accelerated main replacement programs

National Association of State Utility Consumer Advocates Annual Conference, 2008 – Speaker on a case study of "Smart Metering"

Multiple Intervenors Annual Conference – What Will Impact Market Prices? 1998, Syracuse, New York – Speaker on the impact that deregulation would have on market prices for large industrial customers.

IBC Conference – Successful Strategies for Negotiating Purchased Power Contracts, 1997, Washington, DC – Speaker on NY power purchase contract policies, ratepayer valuation, contract approval process and policy on recovery of buyout costs.

Gas Daily Conference – Fueling the Future: Gas' Role in Private Power Projects, 1992, Houston, Texas – Panel member addressing changing power supply requirements of electric utilities.

MEMBERSHIPS/ASSOCIATIONS

Member Municipal Electric Utility Association
Northeast Public Power Association
New York State Independent System Operator

Attachment FWR-2 - CONFIDENTIAL

Attachment FWR-3 – APS Responses on Edison Electric Institute Dues

ARIZONA PUBLIC SERVICE COMPANY
PRE-FILED SET OF DATA REQUESTS
REGARDING THE APPLICATION TO APPROVE RATE SCHEDULES
DESIGNED TO DEVELOP A JUST AND REASONABLE RATE OF RETURN
DOCKET NO. E-01345A-16-0036
JUNE 1, 2016

Pre-filed 1.54: Edison Electric Institute dues.

- a. What amount of dues for EEI has the Company requested? Show the amounts, by account.
- b. Provide copies of the Edison Electric Institute dues invoices for the years 2014 and 2015.
- c. Include invoices for each EEI committee and subgroup.
- d. Identify the portion of EEI dues for each EEI group for lobbying activities that has been recorded into below the line.

Response:

- a. Please see attachment APSRC00490 for the information requested. The company has requested \$720,274 of non-lobbying related EEI membership dues recorded in account 930.2. Also included in the request are subcommittee dues attached in part c below. UARG membership dues of \$185,889 recorded in account 930.2. USWAG membership dues of \$40,500 recorded in account 930.2.
- b. Attached as APSRC00539, and APSRC00540 are the requested invoices.
- c. Attached as APSRC00541, and APSRC00542 are the requested invoices.
- d. Please see attachment APSRC00490 for the information requested. Lobbying expenses for EEI of \$211,748 were recorded into below-the-line accounts during the Test Year. Also included in the EEI dues are donations of \$30,000 that were recorded into below-the-line accounts during the Test Year.

**Edison Electric Institute**

Power by Association

701 Pennsylvania Avenue, N.W. □ Washington, D.C. 20004-2696 □ Phone (202) 508-5000

Invoice for Membership Dues

PINNACLE WEST CAPITAL CORP
400 N 5TH ST
PHOENIX, AZ 85004-3902

Date	Invoice Number
11/27/2013	DUES201450

Payment due on or before 1/31/2014

Description	Total
2014 EEI Membership Dues for:	
Regular Activities of Edison Electric Institute ¹	\$797,963
Industry Issues ²	79,796
Restoration, Operations, and Crisis Management Program ³	5,000
2014 Contribution to The Edison Foundation, which funds IEE ⁴	30,000
Total	\$912,759

1 The portion of 2014 membership dues relating to influencing legislation, which is not deductible for federal income tax purposes, is estimated to be 18%.

2 The portion of the 2014 industry issues support relating to influencing legislation is estimated to be 40%.

3 The Restoration, Operations, and Crisis Management Program funds improvements to industry-wide responses to major outages; continuity of industry and business operations; and EEI's all hazards support and coordination of the industry during times of crises. No portion of this assessment is allocable to influencing legislation.

4 The Edison Foundation is an IRC 501(c)(3) educational and charitable organization. Contributions are deductible for federal income tax purpose to the extent provided by law. Please consult your tax advisor with respect to your specific situation.

PLEASE NOTE INFORMATION FOR ELECTRONIC PAYMENT

The following instructions should be used when transferring funds electronically (ACH or wire) to Edison Electric Institute:

Beneficiary's Bank: Wells Fargo Bank, N.A.
Bank's Address: Washington, DC
Bank's ABA Number: 121000248
Beneficiary: Edison Electric Institute
Beneficiary's Acct No: 2000013842897
Beneficiary's Address: 701 Pennsylvania Avenue, NW
Washington, DC 20004-2696 USA
Beneficiary Reference: 2014 Membership Dues

Please refer any questions to Terri Oliva, EEI Controller: (202) 508-5541 or memberdues@eei.org



IEE | INNOVATION
ELECTRICITY
EFFICIENCY

An Institute of The Edison Foundation

About IEE

IEE is an Institute of The Edison Foundation focused on advancing the adoption of innovative and efficient technologies among electric utilities and their technology partners that will transform the power grid. IEE promotes the sharing of information, ideas, and experiences among regulators, policymakers, technology companies, thought leaders, and the electric power industry. IEE also identifies policies that support the business case for adoption of cost-effective technologies. IEE's members are committed to an affordable, reliable, secure, and clean energy future.

IEE is governed by a Management Committee of electric industry Chief Executive Officers. IEE members are the investor-owned utilities that represent about 70% of the U.S. electric power industry. IEE has a permanent Advisory Committee of leaders from the regulatory community, federal and state government agencies, and other informed stakeholders. IEE has a Strategy Committee of senior electric industry executives and 30 smart grid technology company partners.

About The Edison Foundation

The Edison Foundation (EF) is a 501(c)(3) charitable organization dedicated to bringing the benefits of electricity to families, businesses, and industries worldwide. Furthering Thomas Alva Edison's spirit of invention, the Foundation works to encourage a greater understanding of the production, delivery, and use of electric power to foster economic progress; to ensure a safe and clean environment; and to improve the quality of life for all people. The Edison Foundation provides knowledge, insight, and leadership to achieve its goals through research, conferences, grants, and other outreach activities.



Funding for 2014

EF/IEE requests contributions from individual utilities based on the following revenue formula:

- | | |
|---|----------|
| ▪ Companies with revenues in excess of \$10 billion a year | \$50,000 |
| ▪ Companies with revenues from \$3 billion to \$10 billion a year | \$30,000 |
| ▪ Companies with revenues from \$1 billion to \$3 billion a year | \$15,000 |
| ▪ Companies with revenues less than \$1 billion a year | \$5,000 |

Contributions to The Edison Foundation and its programs are tax deductible in the same manner as contributions to any 501(c)(3) organization.

Membership

Membership is open to all electric utilities, including investor-owned utilities, public power utilities, electric cooperatives, and international utilities.



Invoice for Membership Dues

[REDACTED]
PINNACLE WEST CAPITAL CORP
400 N 5TH ST
PHOENIX, AZ 85004-3902

Date	Invoice Number
12/02/2014	DUES201550

Payment due on or before 1/30/2015

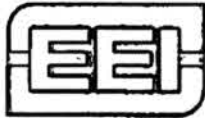
Description	Total
2015 EEI Membership Dues for:	
Regular Activities of Edison Electric Institute ¹	\$833,656
Industry Issues ²	83,366
Restoration, Operations, and Crisis Management Program ³	15,000
2015 Contribution to The Edison Foundation, which funds IEI ⁴	30,000
Total	\$962,022
<p>¹ The portion of 2015 membership dues relating to influencing legislation, which is not deductible for federal income tax purposes, is estimated to be 13%.</p> <p>² The portion of the 2015 industry issues support relating to influencing legislation is estimated to be 25%.</p> <p>³ The Restoration, Operations, and Crisis Management Program is related to improvements to industry-wide responses to major outages (e.g. National Response Event); continuity of industry and business operations; and EEI's all hazards support and coordination of the industry during times of crises. No portion of this assessment is allocable to influencing legislation.</p> <p>⁴ The Edison Foundation is an IRC 501(c)(3) educational and charitable organization. Contributions are deductible for federal income tax purpose to the extent provided by law. Please consult your tax advisor with respect to your specific situation.</p>	

PLEASE NOTE INFORMATION FOR ELECTRONIC PAYMENT

The following instructions should be used when transferring funds electronically (ACH or wire) to Edison Electric Institute:

Beneficiary's Bank: Wells Fargo Bank, N.A.
Bank's Address: Washington, DC
Bank's ABA Number: 121000248
Beneficiary: Edison Electric Institute
Beneficiary's Acct No: 2000013842897
Beneficiary's Address: 701 Pennsylvania Avenue, NW
Washington, DC 20004-2696 USA
Beneficiary Reference: 2015 Membership Dues

Please refer any questions to Terri Oliva, EEI Controller: (202) 508-5541 or memberdues@eei.org



Edison Electric Institute
701 Pennsylvania Avenue, N.W.
Washington, DC 20004-2696
USA

Customer #: 0004149150

Arizona Public Service Co.
400 N 5th Street
Phoenix, AZ 85004-3902

Invoice

Invoice #: 123897
Invoice Date: 02/07/2014
FEIN: 13-0659550

Description	Quantity	Price	Discount	Amount
2014 USWAG Membership Dues	1	\$39,375.00	\$0.00	\$39,375.00

P.O. 700608650
Charge EHS 7621
Dept. 1451
RC 801

This invoice is for the 2014 Utility Solid Waste Activities Group (USWAG) Membership Dues. If you have questions about the invoice, please contact Gayle Novak, at 202-508-5654. If you have questions about making a payment for this invoice, please contact Carol Ray, in EEI's Internal Accounting Department, at 202-508-5428.

Invoice Total	\$39,375.00
Taxes	\$0.00
Amount Paid	\$0.00
PLEASE PAY	\$39,375.00

PLEASE DETACH AND REMIT WITH YOUR PAYMENT

Invoice #: 123897

Customer #: 0004149150

Arizona Public Service Co.
400 N 5th Street
Phoenix, AZ 85004-3902

Remit Payment To:

Edison Electric Institute

701 Pennsylvania Avenue, N.W., Washington, DC 20004-2696, USA

Select Payment Method	
<input type="checkbox"/>	Check Enclosed
Card Provider _____	Exp Date ____/____
Card # _____	
Card Holder's Name _____	
Card Holder's Signature _____	

\$39,375.00

Total Due:

Amt Remitted :

APSRC00541
Page 1 of 2



Edison Electric Institute
701 Pennsylvania Avenue, N.W.
Washington, DC 20004-2696
USA

Customer #: 0004149150

Arizona Public Service Co
400 N 5th Street
Phoenix, AZ 85004-3902

Invoice

Invoice #: 121298
Invoice Date: 12/17/2013
FEIN: 13-0659550

Description	Quantity	Price	Discount	Amount
2014 UARG Membership Dues	1	\$177,024.00	\$0.00	\$177,024.00

PO 700608053
Unit 1451
RC 801
~~Charge # 99-165-114~~
Charge # 99-165-114

This invoice is for your participation in the Utility Air Regulatory Group (UARG) for the calendar year 2014. If you have questions about the program, please contact Andrea Field at 202-955-1558. If you have questions regarding this invoice or to make payment arrangements, please contact Carol Ray, in EEI's Internal Accounting Department, on 202-508-5428.

Invoice Total	\$177,024.00
Taxes	\$0.00
Amount Paid	\$0.00
PLEASE PAY	\$177,024.00

PLEASE DETACH AND REMIT WITH YOUR PAYMENT

Invoice #: 121298

Customer #: 0004149150

Arizona Public Service Co
400 N 5th Street
Phoenix, AZ 85004-3902

Remit Payment To:

Edison Electric Institute

701 Pennsylvania Avenue, N.W., Washington, DC 20004-2696, USA

Select Payment Method	
<input type="checkbox"/>	Check Enclosed
Card Provider _____	Exp Date ____/____
Card # _____	
Card Holder's Name _____	
Card Holder's Signature _____	

\$177,024.00

Total Due:

Pr# 1190046



Edison Electric Institute
701 Pennsylvania Avenue, N.W.
Washington, DC 20004-2696
USA

Customer #: 0004074490

Pinnacle West Capital Corp.
PO Box 53999, MS8695
Phoenix, AZ 85072-3999

Invoice

Invoice #: 139008
Invoice Date: 12/17/2014
FEIN: 13-0659550

Description	Quantity	Price	Discount	Amount
2015 UARG Membership Dues	1	\$185,889.00	\$0.00	\$185,889.00

account EHS 8021

unit - 1460

TOC - 620

Elizabeth - 2014

This invoice is for your participation in the **Utility Air Regulatory Group (UARG) for the calendar year 2015**. If you have questions about the program, please contact Andrea Field at 202-955-1558. If you have questions regarding this invoice or to make payment arrangements, please contact Carol Ray, in EEI's Internal Accounting Department, on 202-508-5428.

Invoice Total	\$185,889.00
Taxes	\$0.00
Amount Paid	\$0.00
PLEASE PAY	\$185,889.00

PLEASE DETACH AND REMIT WITH YOUR PAYMENT

Invoice #: 139008

Customer #: 0004074490

Pinnacle West Capital Corp.
PO Box 53999, MS8695
Phoenix, AZ 85072-3999

Remit Payment To:

Edison Electric Institute

701 Pennsylvania Avenue, N.W., Washington, DC 20004-2696, USA

Select Payment Method	
<input type="checkbox"/>	Check Enclosed
Card Provider _____	Exp Date ____ / ____
Card # _____	
Card Holder's Name _____	
Card Holder's Signature _____	

\$185,889.00

Total Due:



Edison Electric Institute
701 Pennsylvania Avenue, N.W.
Washington, DC 20004-2696
USA

Customer #: 0004149150

Arizona Public Service Co.
400 N 5th Street
Phoenix, AZ 85004

Invoice

Invoice #: 140501
Invoice Date: 01/23/2015
FEIN: 13-0659550

Description	Quantity	Price	Discount	Amount
2015 USWAG Membership Dues	1	\$40,500.00	\$0.00	\$40,500.00

This invoice is for the 2015 Utility Solid Waste Activities Group (USWAG) Membership Dues. If you have questions about the invoice, please contact Gayle Novak, at 202-508-5654. If you have questions about making a payment for this invoice, please contact Carol Ray, in EEI's Internal Accounting Department, at 202-508-5428.

Invoice Total	\$40,500.00
Taxes	\$0.00
Amount Paid	\$0.00
PLEASE PAY	\$40,500.00

PLEASE DETACH AND REMIT WITH YOUR PAYMENT

Invoice #: 140501

Customer #: 0004149150

Arizona Public Service Co.
400 N 5th Street
Phoenix, AZ 85004

Remit Payment To:

Edison Electric Institute

701 Pennsylvania Avenue, N.W., Washington, DC 20004-2696, USA

Select Payment Method

☐ Check Enclosed

Card Provider _____ Exp Date ____/____

Card # _____

Card Holder's Name _____

Card Holder's Signature _____

\$40,500.00

Total Due: APSRC00542

Page 2 of 4



575 SEVENTH STREET NW WASHINGTON, DC 20004
T 202 344 4000 F 202 344 4300 www.Venable.com



January 20, 2015

TO: USWAG Policy Committee

Enclosed is an invoice for your company's 2015 participation in the Utility Solid Waste Activities Group (USWAG).

The total 2015 USWAG Budget is \$3,905,000. We are pleased to report that Metropolitan Water District of Southern California has joined USWAG since the 2014 billing cycle. Avista Corporation discontinued membership in 2015.

Please note that the revised formula will not be applied until calculation of 2016 dues. The revised guidelines, assessing dues on retired coal units, is in effect for calculation of 2015 dues. Please reference the [October Policy Committee meeting minutes](#) for details.

The Policy Committee agreed to a 2015 dues assessment of \$36,000 per full share. The USWAG dues assessments are as follows:

<u>Share</u>	<u>Assessment</u>
.125	4,500
.250	9,000
.375	13,500
.500	18,000
.625	21,875
.750	27,000
.875	31,500
1.000	36,000
1.125	40,500
1.250	45,000
1.375	49,500
1.500	54,000
1.625	58,500
1.750	63,000
1.875	67,500
2.000	72,000
2.125	76,500
2.250	81,000



575 SEVENTH STREET NW WASHINGTON, DC 20034
T 202 344 4000 F 202 344 4300 www.Venable.com



<u>Share</u>	<u>Assessment</u>
2.375	85,500
2.500	90,000
2.625	94,500
2.750	99,000
2.875	103,500
3.000	108,000
3.125	112,500
3.250	117,000
3.375	121,500
3.500	126,000
3.625	130,500
3.750	135,000
3.875	139,500
4.000	144,000

Thank you for your continued membership in USWAG. If you have any questions regarding your billing, please contact the Manager of Environmental and USWAG Program Services, Gayle Novak at 202-508-5654 or gayle.novak@uswag.org.

Sincerely,

Terry E. Coss, Xcel Energy
USWAG Chairman

Enclosure

This electronic mail transmission may contain confidential or privileged information. If you believe you have received this message in error, please notify the sender by reply transmission and delete the message without copying or disclosing it.

EEI Membership Dues

Membership Due	FERC Account	2014	2015
EEI Annual Membership Due	4261000	30,000.00	30,000.00
	4264000	202,683.00	211,748.00
	9302000	680,076.00	720,274.00
UARG Membership Dues	9302000	177,024.00	185,889.00
USWAG Membership Dues	9302000	39,375.00	40,500.00
		<u>1,129,158.00</u>	<u>1,188,411.00</u>

EEI Membership Dues by FERC Account

BTL Donations	4261000	30,000.00	30,000.00
BTL Lobbying EEI Dues	4264000	202,683.00	211,748.00
Operations and Maintenance	9302000	896,475.00	946,663.00
		<u>1,129,158.00</u>	<u>1,188,411.00</u>

**Attachment FWR-4 – APS Response to Discovery on Mechanics
of Ocotillo Deferral Mechanism**

ARIZONA CORPORATION COMMISSION STAFF'S
NINTH SET OF DATA REQUESTS TO
ARIZONA PUBLIC SERVICE COMPANY REGARDING
THE APPLICATION TO APPROVE RATE SCHEDULES DESIGNED TO
DEVELOP A JUST AND REASONABLE RATE OF RETURN
DOCKET NO. E-01345A-16-0036
AND
DOCKET NO. E-01345A-16-0123
OCTOBER 11, 2016

Staff 9.19: Refer to the direct testimony and workpapers of APS witness Snook concerning the Company's Ocotillo Deferral Request.

- a. Show in detail how each amount on Mr. Snook's Ocotillo Deferral Request workpapers [LRS_WP01DR - Ocotillo deferral and SCR rev req.xlsx] on the "Ocotillo WPS" tab was derived.
- b. Why are no "overhead loads" included in the plant costs?
- c. What estimated "overhead loads" would be recorded by APS for:
 - i. Units 3, 4 and 5?
 - ii. Units 6 and 7?
- d. Does the Company's accounting deferral request include any plant costs associated with "overhead loads"?
 - i. If not, explain fully why not.
 - ii. If so, how much?
- e. What debt rate is used to compute the Debt Return?
- f. Show in detail how the Debt Return amounts are calculated.
- g. What depreciation rate and useful life are used for the Depreciation Expense?
- h. Show in detail how the Depreciation Expense amounts are calculated.
- i. Would any carrying charges be applied during the amortization period?
- j. If the answer to part i is "yes" explain fully, and show in detail how the carrying charges during the amortization period would be computed.
- k. How are the "Average Rate Base - 2019" amounts

ARIZONA CORPORATION COMMISSION STAFF'S
NINTH SET OF DATA REQUESTS TO
ARIZONA PUBLIC SERVICE COMPANY REGARDING
THE APPLICATION TO APPROVE RATE SCHEDULES DESIGNED TO
DEVELOP A JUST AND REASONABLE RATE OF RETURN
DOCKET NO. E-01345A-16-0036
AND
DOCKET NO. E-01345A-16-0123
OCTOBER 11, 2016

calculated? Show in detail.

- l. The Company's proposed Commission Order language at page 14 of Mr. Snook's direct testimony does not specify an amortization period for the deferral. If that language were used, would the decision concerning the amortization period be reserved for the Commission to make in a future APS rate case?
- m. Is the Company requesting to defer any equity return amounts for the OMP?
- n. If the answer to part m is "yes" identify, quantify and explain all equity return deferrals related to the OMP that APS is proposing.
- o. How will APS account for the revenue it receives from the generation of energy that is produced by the OMP during the accounting deferral period? Explain fully.
- p. For each month of the anticipated accounting deferral period, identify the amount of energy generation anticipated from the OMP.
- q. For each month of the anticipated accounting deferral period, identify the amount of revenue that APS expects from the energy generation anticipated from the OMP.
- r. For each month of the OMP accounting deferral period, show and explain how the cost of power from the OMP compares with the amount of estimated payments for energy that APS would be making to obtain the energy from an alternative source.
- s. Is the OMP anticipated to generate any savings in fuel or purchased power cost during the accounting deferral period?
 - i. If not, explain fully why not.
 - ii. If so, identify, quantify and explain the anticipated fuel and purchased power savings associated with the OMP.

ARIZONA CORPORATION COMMISSION STAFF'S
NINTH SET OF DATA REQUESTS TO
ARIZONA PUBLIC SERVICE COMPANY REGARDING
THE APPLICATION TO APPROVE RATE SCHEDULES DESIGNED TO
DEVELOP A JUST AND REASONABLE RATE OF RETURN
DOCKET NO. E-01345A-16-0036
AND
DOCKET NO. E-01345A-16-0123
OCTOBER 11, 2016

- t. Is the OMP anticipated to be eligible for accelerated tax depreciation and bonus tax depreciation?
 - i. If not, explain fully why not.
 - ii. If so, identify the amounts of accelerated tax depreciation and bonus tax depreciation in each tax year that is expected for the OMP.
- u. Does APS agree that accelerated and bonus tax depreciation represents an important source of non-investor supplied cost-free financing? If not, explain fully why not.

Response:

- a. Please see attachment APSRC01392 for additional details in support of LRS_WP01DR - Ocotillo deferral and SCR rev req.xlsx work paper "Ocotillo WPS" tab. Table A & B at lines 7 thru 60 relate to Ocotillo Modernization Project (OMP) cost deferrals.
- b. Please note that Mr. Snook's testimony at page 12, line 20, states that the actual deferral will reflect the total ownership cost incurred in construction and operation of OMP project. Actual costs will include the actual direct and actual overhead loads for the project. Mr. Snook's work papers were prepared using only direct construction costs primarily for two reasons. First, the overhead loads that will apply to this project are not yet known. Overhead loads can be quite variable from year-to-year and business area to business area. Second, the amount of the Company's expected investment in OMP has previously been reported to the Commission and other external parties on the basis of direct costs only. To avoid confusion, the Company decided to use previously disclosed direct costs in its estimate. See Response to Staff 9.19(c) below for a rough estimate of the impact the inclusion of overhead loads may have on the annualized deferral.
- c. Overhead loads are administrative and general (A&G) and engineering and supervision (E&S) costs allocated to capital projects. The actual overhead allocation ratio can vary from year to year depending on the level of A&G and E&S costs in a given year and the volume of capital projects subject to those allocations. The estimated overhead loads related to

Witness: Leland Snook
Page 3 of 6

ARIZONA CORPORATION COMMISSION STAFF'S
NINTH SET OF DATA REQUESTS TO
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DEVELOP A JUST AND REASONABLE RATE OF RETURN
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AND
DOCKET NO. E-01345A-16-0123
OCTOBER 11, 2016

OMP could be in the range of 6%, or approximately \$30 million. On an annualized basis, this load rate would increase the cost deferral by approximately \$2.5 million.

- i. Overhead loads on OMP Units 3, 4 and 5 could be in the range of 6% or approximately \$18M. On an annualized basis, this load rate would increase the cost deferral by approximately \$1.5 million.
 - ii. Overhead loads on OMP Units 6 and 7 could be in the range of 6% or approximately \$12M. On an annualized basis, this load rate would increase the cost deferral by approximately \$1.0 million.
- d. Yes, please see Response to Staff 9.19 (b) and (c) above.
- e. Work paper LRS_WP01DR Page 2 of 2 used an incremental debt return of 6.75%.
- f. Please see attachment APSRC01392 page 1 line 12 and line 41 for the calculation of the Debt Return amounts. A debt return is applied to 100% of the OMP in-service rate base for the number of months in deferral period. The expense associated with the debt return is deferred.
- g. A depreciation rate of 3.125% with a useful life of 32 years was used to estimate the depreciation expense for OMP.
- h. Please see attachment APSRC01392 page 1 line 9 & 38 for the calculation of the depreciation expense amounts.
- i. After the costs of the OMP have been incorporated into the Company's base rates, which is likely to be at the conclusion of the Company's next rate case following the current case, cost deferrals for OMP will cease. Carrying charges for both debt and equity will be applied to the OMP rate base value at that time just as they apply to any other investment comprising the Company's rate base. Similarly, at the conclusion of the Company's next rate case, it is expected that the balance of the deferred expenses will start to be amortized and recovered in base rates. As with any other rate base item, the regulatory asset related to the accumulated deferred expenses will incur carrying charges

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AND
DOCKET NO. E-01345A-16-0123
OCTOBER 11, 2016

for both debt and equity.

- j. Please see the Response to Staff 9.19(i) above. The carrying charges will be equal to the value of the regulatory asset in the Company's adjusted test year in (presumably) the Company's next rate case times the Company's weighted average cost of capital, including income taxes for the equity return portion, authorized by the Commission in that rate case.
- k. Additional details on OMP average rate base estimates can be seen in attachment APSRC01392 page 1 line 31 and line 60.
- l. Yes.
- m. No.
- n. Not applicable.
- o. Customers will get the benefit of the OMP from the first day the units are in service. These benefits may occur as reduced fuel and purchased power expenses or as higher off-system margins. See the Response to Staff 9.19(s) below. In both cases, the changes in fuel and purchased power expenses will be reflected in lower PSA rates to customers once the units become operational.
- p. The deferral period has not yet been determined, however, attachment APSRC01388 shows anticipated monthly generation from OMP from when it is expected to go in service through the end of 2022.
- q. The OMP units are being developed to serve APS's native load requirements. To the extent that the units are available and market conditions are favorable, the units may be used to generate off system sales. These sales and associated revenues have not been estimated. Whatever they may be, they will be credited to APS customers.
- r. OMP is being developed for capacity, reliability, quick start capability, fast-ramping and flexible operation purposes. Comparable resource alternatives were evaluated in a 2015

Witness: Leland Snook
Page 5 of 6

ARIZONA CORPORATION COMMISSION STAFF'S
NINTH SET OF DATA REQUESTS TO
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OCTOBER 11, 2016

Peaking RFP. Results from that RFP showed that the OMP is less expensive than comparable alternative sources. Please refer to the independent monitor's letter provided in response to Staff 9.12a attachment APSRC01385.

- s. OMP is expected to generate savings in fuel and purchase power costs during the accounting deferral period compared to not having OMP in service. The units are more efficient than the steam units currently at Ocotillo, more efficient than the other CTs on APS system, and provide added flexibility to the system. The flexibility including quick starting and fast-ramping of the OMP units allow APS to integrate greater amounts of solar renewable generation by ramping down as solar generation is added to the system and ramping up quickly to full load as solar generation falls sharply as the sun is setting. APS does not have an estimate of savings in fuel and purchase power that fully incorporates these benefits.
- t. Yes, the capital investment in OMP is anticipated to be eligible for accelerated bonus tax depreciation based on current federal tax legislation.
 - i. This question does not apply given that the response to 9.19 t. is yes.
 - ii. Please see attachment APSRC01392 page 1 line 26 & 55 which indicate the estimated amounts of accelerated bonus tax depreciation related to OMP.
- u. Yes. For this reason APS reduces rate base by the deferred tax impact associated with accelerated and bonus accelerated tax depreciation. This treatment will be applied to bonus accelerated tax depreciation on OMP.

OMP and SCR cost deferral detailed work paper - Staff Question 5.19 and 5.20
Supporting Details to LRS_WP01DR **Most Values are in \$Millions**

Line #	TABLE - A : OMP U6 & U7	2016	2017	2018	2019	Totals	Comments & Notes
	OMP Costs - U6 & U7 in-service Nov & Dec 2018 deferrals begin Dec 2018						
7	Deferral Months This period	0	0	1	12		Number of months for deferrals
8	O&M	-	-	0.1	0.9	1.0	New CT unit "Fixed" O&M
9	Book Depreciation	-	-	0.5	6.6	7.2	Book depr. at book rate with calendar months factored into estimate
10	Other expense	-	-	-	-	-	Other expense
11	Property Taxes - 2 year lag	-	-	-	-	-	Property taxes normally have a two year lag before they are billed
12	Debt Return	100%	6.75%	-	11.4	12.4	Deferrals normally are allowed a 100% debt return
13	Equity Return	0%	10.5%	-	-	-	No equity return use 100% debt return for deferral period
14	Tax on Equity Return	40%	167%	-	-	-	Taxes result only when we are using an equity return
15	Annual Deferrals - \$Ms	-	-	1.6	19.0	20.6	Sub-Total costs and return deferral amounts
16	Annual Amortization - \$Ms			-	-	-	
17	Cumulative Deferrals Balance	-	-	1.6	20.6		
18							
19	Months in service	0	0	2	12		
20	Gross Plant	Nov & Dec 2018	-	208.2	212.1		Construction Values - \$Ms
21	Accum. Depr	32.0 3.1%	-	(1.1)	(7.7)		198.8 CapEx Total No AFUDC No Loads
22	OCID		-	207.1	204.4		- Overhead costs assumed
23							9.4 Estimated Capitalized AFUDC
24	Macrs Tax %s	B. Macrs 15 - Bonus 2018		43%	6%		208.2 Total Estimate for Plant in Service
25	Book Depreciation	3.1%		1.1	6.6		Accelerated Bonus Depreciation Rates for 2018
26	Tax Depreciation			89.5	12.1		Book Depreciation at straight-line rate
27	Tax Depr O/(U) Book Depr			88.4	5.5		Tax Depreciation at accelerated tax rates
28	Tax Depr Delta at marginal tax rate			(35.4)	(2.2)		Tax Depreciation Difference over book rate
29	Deferred Income Tax - Cumulative Balance			(35.4)	(37.6)		Annual deferred tax at marginal tax rate
30	Rate Base end of period	(line 22 + line29)		171.7	166.9		Cumulative deferred tax and reduction to rate base
31	Rate Base average for return calc	(2 pt Ave)		190.0	169.3		Average rate base is 2pt - 100 % Return considers months in period
	TABLE - B : OMP U6, U7 & U8	2016	2017	2018	2019	Totals	Comments & Notes
	OMP Costs - U5, U4 & U3 in-service Jan, Feb, Mar 2019 deferrals begin Feb 2019						
36	Deferral Months This period	0	0	0	10		Number of months for deferrals
37	O&M	-	-	-	1.4	1.4	New CT unit "Fixed" O&M
38	Book Depreciation	-	-	-	7.9	7.9	Book depr. at book rate with calendar months factored into estimate
39	Other expense	-	-	-	-	-	Other expense
40	Property Taxes - 2 year lag	-	-	-	-	-	Property taxes normally have a two year lag before they are billed
41	Debt Return	100%	6.75%	-	15.4	15.4	Deferrals normally are allowed a 100% debt return
42	Equity Return	0%	10.5%	-	-	-	No equity return use 100% debt return for deferral period
43	Tax on Equity Return	40%	167%	-	-	-	Taxes result only when we are using an equity return
44	Annual Deferrals - \$Ms	-	-	-	24.7	24.7	Sub-Total costs and return deferral amounts
45	Annual Amortization - \$Ms			-	-	-	
46	Cumulative Deferrals Balance	-	-	-	24.7		
47							
48	Months in service	0	0	0	10		
49	Gross Plant	by Mar 2019	-	-	321.5		Construction Values - \$Ms
50	Accum. Depr	32.0 3.1%	-	-	(7.9)		298.2 CapEx Total No AFUDC No Loads
51	OCID		-	-	313.6		- Overhead costs assumed
52							23.3 Estimated Capitalized AFUDC
53	Macrs Tax %s	B. Macrs 15 - Bonus 2019		0%	34%		321.5 Total Estimate for Plant in Service
54	Book Depreciation	2.9%		-	7.9		Accelerated Bonus Depreciation Rates for 2018
55	Tax Depreciation			-	107.7		Book Depreciation at straight-line rate
56	Tax Depr O/(U) Book Depr			-	99.8		Tax Depreciation at accelerated tax rates
57	Tax Depr Delta at marginal tax rate			-	(39.9)		Tax Depreciation Difference over book rate
58	Deferred Income Tax - Cumulative Balance			-	(39.9)		Annual deferred tax at marginal tax rate
59	Rate Base end of period	(line 51 + line58)		-	273.7		Cumulative deferred tax and reduction to rate base
60	Rate Base average for return calc	(2 pt Ave)		-	297.6		Average rate base is 2pt - 100 % Return considers months in period

OMP and SCR cost deferral detailed work paper - Staff Question 5.19 and 5.20
Supporting Details to LRS_WP01DR **Most Values are in \$Millions**

		*Step Increase January 2019				
Line #	TABLE - C - SCRs U4	2016	2017	2018	2019	Totals
4C SCRs equipment costs for unit #4 - In-service Apr 2018, cost deferral thru Dec 2018 and Step Increase in Jan 2019 and amortization begins Jan 2019						
65	Surcharge Months This period	0	1	8	12	
66	O&M	-	-	-	-	
67	Book Depreciation	-	-	4.6	6.8	11.4
68	Regulatory Asset Amortization	-	-	-	2.5	2.5
69	Property Taxes - 2 year lag	-	-	-	-	-
70	Debt Return	100%	6.75%	-	7.8	5.3
71	Equity Return starts Jan 2019	54%	10.5%	-	9.6	9.6
72	Tax on Equity Return	40%	167%	-	6.4	6.4
73	Annual Deferrals - \$Ms	-	-	12.4	-	12.4
74	Annual Amortization - \$Ms	5	Years	-	(2.5)	-
75	Annual Revenue Req. - \$Ms	(Sum line#67 to #72)	-	-	30.6	-
76	Cumulative Deferrals Balance	-	-	12.4	9.9	-
77						
78	Months in service	0	1	12	12	
79	Gross Plant	Apr-18	-	213.6	213.6	
80	Accum. Depr	31	3.2%	(6.8)	(13.7)	
81	OCID	-	-	206.8	199.9	
82						
83	Macrs Tax Rates	B. Macrs 20 - Bonus 2018	-	42%	4%	
84	Book Depreciation	3.2%	-	6.8	6.8	
85	Tax Depreciation	-	-	90.2	9.3	
86	Tax Depr O/(U) Book Depr	-	-	83.4	2.4	
87	Tax Depr Delta at marginal tax rate	-	-	(33.4)	(1.0)	
88	Deferred Income Tax - Cumulative Balance	-	-	(33.4)	(34.3)	
89	Rate Base end of period	(line 81 + line 88)	-	173.4	165.6	
90	Rate Base average for return calc	(2 pt Ave)	-	193.5	169.5	
<div> <div>Number of months for deferrals</div> <div>No incremental OM</div> <div>Book depr. at book rate at number of calendar months</div> <div>Regulatory Asset Amortization</div> <div>Property taxes normally have a two year lag before they are billed</div> <div>Deferral period at 100% debt - Jan 2019 on uses 54/46 Equity / Debt return</div> <div>No equity return deferrals - Equity begins Jan 2019 with step increase</div> <div>Taxes result only when we are using an equity return</div> <div>Sub-total costs and return on capital for surcharge (with equity)</div> <div>No amortization needed due to surcharge recovery</div> <div>Annual Revenue Requirement - \$Ms</div> </div> <div> <div>Construction Values - \$Ms</div> <div>200.0 CapEx Total No AFUDC No Loads</div> <div>- Overhead costs assumed</div> <div>13.6 Estimated Capitalized AFUDC</div> <div>213.6 Total Estimate for Plant in Service</div> <div>Accelerated Bonus Depreciation Rates for 2018</div> <div>Book Depreciation at straight-line rate</div> <div>Tax Depreciation at accelerated tax rates</div> <div>Tax Depreciation Difference over book rate</div> <div>Annual deferred tax at marginal tax rate</div> <div>Cumulative deferred tax and reduction to rate base</div> <div>Average rate base is 2pt - 100 % Return considers months in period</div> </div>						
		*Step Increase January 2019				
Line #	TABLE - D - SCRs U5	2016	2017	2018	2019	Totals
4C SCRs equipment costs for unit #5 - In-service Dec 2017 with cost deferrals thru Dec 2018, Step Increase Jan 2019 and amortization begins Jan 2019						
95	Surcharge Months This period	0	1	12	12	
96	O&M	-	-	-	-	
97	Book Depreciation	-	0.5	6.6	6.6	13.6
98	Regulatory Asset Amortization	-	-	-	3.7	3.7
99	Property Taxes - 2 year lag	-	-	-	1.3	1.3
100	Debt Return	100%	6.75%	0.8	10.8	4.9
101	Equity Return starts Jan 2019	54%	10.5%	-	8.9	8.9
102	Tax on Equity Return	40%	167%	-	5.9	5.9
103	Annual Deferrals - \$Ms	-	1.3	17.4	-	18.7
104	Annual Amortization - \$Ms	5	Years	-	(3.7)	-
105	Annual Revenue Req. - \$Ms	(Sum line#95 to #102)	-	-	31.3	-
106	Cumulative Deferrals Balance	-	1.3	18.7	15.0	-
107						
108	Months in service	0	1	8	12	
109	Gross Plant	Dec-17	-	185.4	204.7	204.7
110	Accum. Depr	31	3.2%	(0)	(5)	(11)
111	OCID	-	-	185	200	193
112						
113	Macrs Tax %s	B. Macrs 20 - Bonus 2017	52%	4%	3%	
114	Book Depreciation	3.2%	0	4	7	
115	Tax Depreciation	-	-	96	7	
116	Tax Depr O/(U) Book Depr	-	-	96	3	
117	Tax Depr Delta at marginal tax rate	-	-	(38)	(1)	(0)
118	Deferred Income Tax - Cumulative Balance	-	-	(38)	(39)	(40)
119	Other	0	-	-	-	-
120	Rate Base end of period	(line 111 + 118+119)	-	147	160	154
121	Rate Base average for return calc	(2 pt Ave)	-	147	160	157
<div> <div>New unit "Fixed" O&M from Resource Planning Work sheets</div> <div>From CapEx module specific projects #55</div> <div>Regulatory Asset Amortization</div> <div>Property taxes normally have a two year lag before they are billed</div> <div>Deferral period at 100% debt - Jan 2019 on uses 54/46 Equity / Debt return</div> <div>No equity return deferrals - Equity begins Jan 2019 with step increase</div> <div>Taxes result only when we are using an equity return</div> <div>Sub-total costs and return on capital for surcharge (with equity)</div> <div>No amortization needed due to surcharge recovery</div> <div>Annual Revenue Requirement - \$Ms</div> <div>Cumulative Surcharge Recovery</div> </div> <div> <div>Construction Values - \$Ms</div> <div>197.9 CapEx Total No AFUDC No Loads</div> <div>- Overhead costs assumed</div> <div>6.8 Estimated Capitalized AFUDC</div> <div>204.7 Total Estimate for Plant in Service</div> <div>Accelerated Bonus Depreciation Rates for 2018</div> <div>Book Depreciation at straight-line rate</div> <div>Tax Depreciation at accelerated tax rates</div> <div>Tax Depreciation Difference over book rate</div> <div>Annual deferred tax at marginal tax rate</div> <div>Cumulative deferred tax and reduction to rate base</div> <div>Average rate base is 2pt - 100 % Return considers months in period</div> </div>						

OMP and SCR cost deferral detailed work paper - Staff Question 5.19 and 5.20
Supporting Details to LRS_WP01DR Most Values are in \$Millions

Macrs Tax Depreciation Tables - Normal

Line #	Tax Tables													
126	A. Macrs 31.5	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
127	B. Macrs 20	4%	7%	7%	6%	4%	4%	4%	4%	4%	4%	4%	4%	4%
128	C. Macrs 15	5%	10%	9%	8%	6%	6%	6%	6%	3%				
129	D. Macrs 10	10%	18%	14%	12%									
130	E. Macrs 7	14%	24%	17%	12%									
131	F. Macrs 5	20%	32%	19%	12%									
132	G. Macrs 3	33%	44%	15%	7%									
133														
134														

Macrs Tax Depreciation - Bonus Accelerated (First year accelerated of 50% for 2017, 40% for 2018, 30% for 2019)

Line #	Tax Tables													
135	B. Macrs 15 - Bonus 2017	52.5%	4.8%	4.3%	3.9%	3.0%	3.0%	3.0%	3.0%	1.5%				
136	B. Macrs 20 - Bonus 2017	51.9%	3.6%	3.3%	3.1%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
137														
138	B. Macrs 15 - Bonus 2018	43.0%	5.7%	5.1%	4.6%	3.5%	3.5%	3.5%	3.5%	1.8%				
139	B. Macrs 20 - Bonus 2018	42.3%	4.3%	4.0%	3.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
140														
141	B. Macrs 15 - Bonus 2019	33.5%	6.7%	6.0%	5.4%	4.1%	4.1%	4.1%	4.1%	2.1%				
142	B. Macrs 20 - Bonus 2019	32.6%	5.1%	4.7%	4.3%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
143														
144														

TOTAL O&M Costs - \$Millions

Line #		2016	2017	2018	2019
148	O&M Last Update - February 2016				
149	2 Units LMS - CTs 2018	-	-	0.1	0.9
150	3 Units LMS - CTs 2019	-	-	-	1.4
151	Fixed OM			0.1	2.3

TOTAL MONTHLY OCOTILLO MODERNIZATION PROJECT (OMP) GENERATION (MWH)

	<u>Year</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>ANNUAL</u>
OCOTILLO CT 3-7	2018											4,211	52	4,263
OCOTILLO CT 3-7	2019	2,961	10,868	14,978	7,422	0	1,196	58,284	37,691	8,750	25,996	20,732	1,029	189,908
OCOTILLO CT 3-7	2020	1,323	7,926	11,383	6,884	0	1,309	51,812	35,416	10,096	39,748	20,442	1,221	187,560
OCOTILLO CT 3-7	2021	4,105	5,515	25,055	13,470	2,530	3,220	59,096	38,250	13,354	9,215	27,308	6,859	207,976
OCOTILLO CT 3-7	2022	0	2,549	21,557	5,424	9,191	291	51,426	39,217	8,256	9,783	5,260	2,288	155,243

NOTE: Source is the 2017 Preliminary IRP.

Schedule FWR-1 – RUCO Schedule A-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO COMPUTATION OF INCREASE IN GROSS REVENUE REQUIREMENTS
ACC JURISDICTION
ADJUSTED TEST YEAR ENDED 12/31/2015
(Thousands of Dollars)

<i>Line No.</i>	<i>Description</i>	<i>Original Cost</i>	<i>Electric RCND</i>	<i>Fair Value</i>	<i>Line No.</i>
1.	Adjusted Rate Base	\$ 6,451,009 (a)	\$ 12,859,542 (a)	\$ 9,655,276	1.
2.	Adjusted Operating Income	366,995 (b)	366,995 (b)	366,995 (b)	2.
3.	Current Rate of Return	5.69%	2.85%	3.80%	3.
4.	Required Operating Income	485,761	485,761	485,761	4.
5.	Required Rate of Return on OCRB	7.53% *	3.78% *	5.03% *	5.
6.	Adjusted Operating Income Deficiency on OCRB	118,766	118,766	118,766	6.
7.	Gross Revenue Conversion Factor	1.6155 (c)	1.6155 (c)	1.6155 (c)	7.
8.	Increase in Base Revenue Requirements Based on OCRB	\$ 191,867 **	\$ 191,867 **	\$ 191,867 **	8.
9.	After Tax Return on Fair Value Increment			51,103	9.
10.	Requested Increase in Base Revenue Requirements			\$ 242,970	10.
11.	Required Rate of Return with Fair Value Increment			4.49%	11.

Notes:

* The Rate of Return for OCRB, RCND and Fair Value does not reflect the need for a return on the difference between Fair Value Rate Base and Original Cost Rate Base but is simply a mathematical derivation based upon the original cost rate of return.

** Does not include the fair value increment reflected on Line 9.

Supporting Schedules:

- (a) RUCO B-1
- (b) RUCO C-1, page 2 of 2
- (c) C-3
- (d) H-1

Recap Schedules:

N/A

Schedule FWR-2 – RUCO Schedule B-1

ARIZONA PUBLIC SERVICE COMPANY
SUMMARY OF ORIGINAL COST AND RCND RATE BASE ELEMENTS
TOTAL COMPANY AND ACC JURISDICTION
TEST YEAR ENDED 12/31/2015
(Dollars in Thousands)

Line No.	Description	RUCO						Line No.
		Original Cost				ACC		
		Unadjusted Test Year (a) (A)	Total Company Pro Forma (a) (B)	Adjusted Test Year (a) (C)	Unadjusted Test Year (a) (D)	Pro Forma (a) (E)	Adjusted Test Year (a) (F)	
1.	Gross utility plant in service	\$ 16,835,977	\$ 331,478	\$ 17,167,455	\$ 14,362,768	\$ 325,459	\$ 14,688,227	1.
2.	Less: Accumulated depreciation & amortization	6,402,411	236,260	6,638,671	5,632,319	231,361	5,863,680	2.
3.	Net utility plant in service	10,433,566	95,217	10,528,783	8,730,449	94,098	8,824,547	3.
Deductions:								
4.	Deferred income taxes	2,872,719	136,613	3,009,332	2,359,729	142,708	2,502,437	4.
5.	Investment tax credits (c)	187,080	-	187,080	186,047	-	186,047	5.
6.	Customer advances for construction (c)	115,609	-	115,609	94,903	-	94,903	6.
7.	Customer deposits	72,622	-	72,622	72,622	-	72,622	7.
8.	Pension liabilities	426,442	-	426,442	394,050	-	394,050	8.
9.	Liability for asset retirements (c)	443,576	-	443,576	441,181	-	441,181	9.
10.	Other deferred credits	42,847	-	42,847	41,426	-	41,426	10.
11.	Coal mine reclamation (c)	201,984	-	201,984	200,611	-	200,611	11.
12.	Unrecognized tax benefits (c)	35,251	-	35,251	29,523	-	29,523	12.
13.	Regulatory liabilities	787,438	-	787,438	756,476	-	756,476	13.
14.	Total deductions	5,185,568	136,613	5,322,181	4,576,568	142,708	4,719,276	14.
Additions:								
15.	Regulatory assets	1,098,373	38,062	1,136,435	1,006,675	38,062	1,044,737	15.
16.	Other deferred debits	121,338	-	121,338	113,265	-	113,265	16.
17.	Decommissioning trust accounts (c)	735,196	-	735,196	731,226	-	731,226	17.
18.	OPEB assets (c)	182,625	-	182,625	168,753	-	168,753	18.
19.	Allowance for working capital (d)	324,803	(18,888)	305,915	305,210	(17,453)	287,757	19.
20.	Total additions	2,462,335	19,174	2,481,509	2,325,129	20,609	2,345,738	20.
21.	Total rate base	\$ 7,710,333	\$ (22,222)	\$ 7,688,111	\$ 6,479,010	\$ (28,001)	\$ 6,451,009 (e)	21.

Supporting Schedules:
(a) RUCO B-2 + RUCO Workpaper
(b) B-3
(c) E-1
(d) B-5

Recap Schedules:
(e) RUCO A-1

ARIZONA PUBLIC SERVICE COMPANY
SUMMARY OF ORIGINAL COST AND RCND RATE AYSE ELEMENTS
TOTAL COMPANY AND ACC JURISDICTION
TEST YEAR ENDED 12/31/2015
(Dollars in Thousands)

Line No.	Description	RUCO RCND						Line No.
		Total Company		ACC				
		Unadjusted Test Year (b) (A)	Pro Forma (b) (B)	Adjusted Test Year (b) (C)	Unadjusted Test Year (b) (D)	Pro Forma (b) (E)	Adjusted Test Year (b) (F)	
1.	Gross utility plant in service	\$ 34,956,729	\$ 331,478	\$ 35,288,207	\$ 29,821,577	\$ 325,459	\$ 30,147,037	1.
2.	Less: Accumulated depreciation & amortization	13,659,172	236,260	13,895,432	12,016,225	231,361	12,247,586	2.
3.	Net utility plant in service	21,297,557	95,217	21,392,774	17,805,352	94,098	17,899,450	3.
Deductions:								
4.	Deferred income taxes	6,118,741	136,613	6,255,354	5,026,099	142,708	5,168,807	4.
5.	Investment tax credits (c)	187,080	-	187,080	186,047	-	186,047	5.
6.	Customer advances for construction (c)	115,609	-	115,609	94,903	-	94,903	6.
7.	Customer deposits	72,622	-	72,622	72,622	-	72,622	7.
8.	Pension liabilities	426,442	-	426,442	394,050	-	394,050	8.
9.	Liability for asset retirements (c)	443,576	-	443,576	441,181	-	441,181	9.
10.	Other deferred credits	42,847	-	42,847	41,426	-	41,426	10.
11.	Coal mine reclamation (c)	201,984	-	201,984	200,611	-	200,611	11.
12.	Unrecognized tax benefits (c)	35,251	-	35,251	29,523	-	29,523	12.
13.	Regulatory liabilities	787,438	-	787,438	756,476	-	756,476	13.
14.	Total deductions	8,431,590	136,613	8,568,203	7,242,938	142,708	7,385,646	14.
Additions:								
15.	Regulatory assets	1,098,373	38,062	1,136,435	1,006,675	38,062	1,044,737	15.
16.	Other deferred debits	121,338	-	121,338	113,265	-	113,265	16.
17.	Decommissioning trust accounts (c)	735,196	-	735,196	731,226	-	731,226	17.
18.	OPEB assets (c)	182,625	-	182,625	168,753	-	168,753	18.
19.	Allowance for working capital (d)	324,803	(18,888)	305,915	305,210	(17,453)	287,757	19.
20.	Total additions	2,462,335	19,174	2,481,509	2,325,129	20,609	2,345,738	20.
21.	Total rate base	\$ 15,328,302	\$ (22,222)	\$ 15,306,081	\$ 12,887,543	\$ (28,001)	\$ 12,859,542	(e) 21.

Recap Schedules:
(e) RUCO A-1

Supporting Schedules:
(a) RUCO B-2 and RUCO Workpaper
(b) B-3
(c) E-1
(d) B-5

Schedule FWR-3 – RUCO Schedule B-2

APS - Original Cost Rate Base - Pro Forma Adjustments
RUCO Adjusted for 6 months of Post Test Year Plant
(\$000)

Line No.	Description	(1)		(2)		(3)	
		Actual at End of Test Year 12/31/2015		Fossil Generation Post-Test Year Plant Additions		Nuclear Generation Post-Test Year Plant Additions	
		(a) Total Co. (A)	(b) ACC (B)	Total Co. (C)	ACC (D)	Total Co. (E)	ACC (F)
1.	Gross Utility Plant in Service	\$ 16,835,977	\$ 14,362,768	\$ 103,284	\$ 102,726	\$ 36,425	\$ 36,227
2.	Less: Accumulated Depreciation & Amort.	6,402,411	5,632,319	74,970	74,566	-	24,639
3.	Net Utility Plant in Service	10,433,566	8,730,449	28,313	28,160	11,652	11,588
4.	Less: Total Deductions	5,186,260	4,576,568	25,128	24,992	8,056	8,012
5.	Total Additions	2,462,340	2,325,129	-	-	-	-
6.	Total Rate Base	\$ 7,709,646	\$ 6,479,010	\$ 3,185	\$ 3,168	\$ 3,596	\$ 3,576

PRO FORMA WITNESS:
FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

LUCAS / BLANKENSHIP
1. Jurisdictional
2. Assigned to Production - Demand (DEMPROD1)

CADOGAN / BLANKENSHIP
1. Jurisdictional
2. Assigned to Production - Demand (DEMPROD1)

- (1) Test Year Total Deductions and Total Additions are shown on Schedule B-1.
(2) Adjustment to Test Year rate base to include Post-Test Year Plant Additions for Fossil Generation with an estimated in service date prior to 6/30/2017.
(3) Adjustment to Test Year rate base to include Post-Test Year Plant Additions for Nuclear Generation with an estimated in service date prior to 6/30/2017.

Supporting Schedules
(a) E-1

Recap Schedules:
(b) RUCO B-1

APS - Original Cost Rate Base - Pro Forma Adjustments
RUCO Adjusted for 6 months of Post Test Year Plant
(\$000)

Line No.	Description	(4)		(5)		(6)	
		Distribution and IT/Facilities Post-Test Year Plant Additions		Customer Service Post-Test Year Plant Additions		Renewables & Modern Grid Post-Test Year Plant Additions	
		Total Co. (G)	ACC (H)	Total Co. (I)	ACC (J)	Total Co. (K)	ACC (L)
1.	Gross Utility Plant in Service	\$ 164,008	\$ 158,679	\$ -	\$ -	\$ 41,594	\$ 41,585
2.	Less: Accumulated Depreciation & Amort.	\$ 126,096	121,714	51	47	-	-
3.	Net Utility Plant in Service	37,912	36,965	(51)	(47)	15,650	15,646
4.	Less: Total Deductions	\$ 59,341	65,620	99	91	32,362	32,355
5.	Total Additions	-	-	-	-	1,867	1,867
6.	Total Rate Base	\$ (21,429)	\$ (28,655)	\$ (150)	\$ (138)	\$ (4,551)	\$ (4,549)

PRO FORMA WITNESS:
FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

TETLOW / BLANKENSHIP
1. Jurisdictional
2. Distribution facilities functionalized on
Distribution and IT/Facilities functionalized
on Wages & Salaries

DERSTINE / BLANKENSHIP
1. Jurisdictional
2. Functionalized on Wages & Salaries.

BORDENKIRCHER / BLANKENSHIP
1. Jurisdictional
2. Renewables functionalized on Demand
Production [Retail DEMPROD1], Grid
functionalized on Distribution.

(4) Adjustment to Test Year rate base to include Post-Test Year Plant Additions for Distribution and IT/Facilities with an estimated
in service date prior to 6/30/2017.

(5) Adjustment to Test Year rate base to include Post-Test Year Plant Additions for Customer Service with an estimated
in service date prior to 6/30/2017.

(6) Adjustment to Test Year rate base to include Post-Test Year Plant Additions for Renewables & Modern Grid with an estimated
in service date prior to 6/30/2017.

Supporting Schedules
(a) E-1

Recap Schedules:
(b) RUCO B-1

APS - Original Cost Rate Base - Pro Forma Adjustments
RUCO Adjusted for 6 months of Post Test Year Plant
(\$000)

Line No.	Description	(7)		(8)		(9)	
		Include AG-1 Deferral		Include West Phoenix Unit 4 Regulatory Disallowance		Include Property Tax Deferral	
		Total Co. (M)	ACC (N)	Total Co. (O)	ACC (P)	Total Co. (Q)	ACC (R)
1.	Gross Utility Plant in Service	\$ -	\$ -	\$ (13,833)	\$ (13,758)	\$ -	\$ -
2.	Less: Accumulated Depreciation & Amort.	-	-	(5,280)	(5,251)	-	-
3.	Net Utility Plant in Service	-	-	(8,553)	(8,507)	-	-
4.	Less: Total Deductions	5,309	5,309	(2,038)	(2,027)	14,680	14,680
5.	Total Additions	13,935	13,935	-	-	38,529	38,529
6.	Total Rate Base	<u>\$ 8,626</u>	<u>\$ 8,626</u>	<u>\$ (6,515)</u>	<u>\$ (6,480)</u>	<u>\$ 23,849</u>	<u>\$ 23,849</u>

PRO FORMA WITNESS:
FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

MIESSNER
1. General Service ACC Specific
2. Revenues and expenses are class
specific.

BLANKENSHIP
1. Jurisdictional
2. Assigned to Production - Demand
(DEMPROD1)

BLANKENSHIP
1. ACC Specific
2. Functionalized on P T & D

(7) Adjustment to Test Year rate base to include the estimated AG-1 deferral amount from 6/30/2016 to 6/30/2017 per Decision No. 75322.

(8) Adjustment to Test Year rate base to reflect depreciation of regulatory disallowance of West Phoenix Unit 4 per Decisions Nos. 67744 and 69663.

(9) Adjustment to Test Year rate base to include the estimated property tax deferral amount from 1/1/2016 to 6/30/2017 per Decision No. 73183.

Supporting Schedules
(a) E-1

Recap Schedules:
(b) RUCO B-1

APS - Original Cost Rate Base - Pro Forma Adjustments
RUCO Adjusted for 6 months of Post Test Year Plant
(\$000)

Line No.	Description	(10)		(11)		(12)	
		Adjust Cash Working Capital for Cost of Service		Total Original Cost Rate Base Pro Forma Adjustments		Adjusted at End of Test Year 12/31/2015	
		Total Co. (S)	ACC (T)	Total Co. (U)	ACC (V)	Total Co. (W)	ACC (X)
1.	Gross Utility Plant in Service	\$ -	\$ -	\$ 331,478	\$ 325,459	\$ 17,167,455	\$ 14,688,227
2.	Less: Accumulated Depreciation & Amort.	-	-	236,260	231,361	6,638,671	5,863,680
3.	Net Utility Plant in Service	-	-	95,217	94,098	10,528,783	8,824,547
4.	Less: Total Deductions	-	-	142,937	149,032	5,329,197	4,725,600
5.	Total Additions	(18,888)	(17,453)	35,443	36,878	2,497,783	2,362,007
6.	Total Rate Base	<u>\$ (18,888)</u>	<u>\$ (17,453)</u>	<u>\$ (12,277)</u>	<u>\$ (18,056)</u>	<u>\$ 7,697,369</u>	<u>\$ 6,460,954</u>

PRO FORMA WITNESS:
FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

BLANKENSHIP
1. Jurisdictional
2. Functionalized on Wages & Salaries

54,331

54,331

(10) Adjustment to Cash Working Capital to reflect impacts of cost of service pro formas on the lead/lag study.

Supporting Schedules
(a) E-1

Recap Schedules:
(b) RUCO B-1

Schedule FWR-4 – RUCO Schedule C-1

ARIZONA PUBLIC SERVICE COMPANY
TOTAL COMPANY
RUCO ADJUSTED TEST YEAR INCOME STATEMENT
TEST YEAR ENDED 12/31/2015
(Dollars in Thousands)

Line No.	Description	Total Company			Line No.
		Actual For The Test Year Ended 12/31/2015 (a) (A)	Proforma Adjustments (b) (B)	Test Year Results After Proforma Adjustments (c) (C)	
	Electric Operating Revenues				
1.	Revenues from Base Rates	\$ 2,909,648	\$ 28,503	\$ 2,938,151	1.
2.	Revenues from Surcharges	408,660	(408,660)	-	2.
3.	Other Electric Revenues	174,049	(3,948)	170,101	3.
4.	Total	3,492,357	(384,105)	3,108,252	4.
	Operating expenses:				
5.	Electric fuel and purchased power	1,101,298	(100,561)	1,000,737	5.
6.	Operations and maintenance excluding fuel expenses	892,796	(129,678)	763,118	6.
7.	Depreciation and amortization	474,131	65,919	540,050	7.
8.	Income taxes	260,143	(100,185)	159,958	8.
9.	Other taxes	171,499	26,140	197,639	9.
10.	Total	2,899,866	(238,365)	2,661,502	10.
11.	Operating income	592,491	(145,740)	446,750	11.
	Other income (deductions):				
12.	Income taxes	14,302	-	14,302	12.
13.	Allowance for equity funds used during construction	35,215	-	35,215	13.
14.	Other income	2,834	-	2,834	14.
15.	Other expense	(19,019)	-	(19,019)	15.
16.	Total	33,332	-	33,332	16.
17.	Income before interest deductions	625,823	(145,740)	480,082	17.
	Interest deductions:				
18.	Interest on long-term debt	179,563	-	179,563	18.
19.	Interest on short-term borrowings	7,376	-	7,376	19.
20.	Debt discount, premium and expense	4,793	-	4,793	20.
21.	Allowance for borrowed funds used during construction	(16,183)	-	(16,183)	21.
22.	Total	175,549	-	175,549	22.
23.	Net income	\$ 450,274	\$ (145,740)	\$ 304,533	23.

Supporting Schedules:

- (a) E-2
(b) RUCO C-2

Recap Schedules:

- (c) RUCO A-2

Schedule FWR-5 – RUCO Schedule C-2

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted INCOME STATEMENT PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(1)			(2)			(3)		
		Fossil Generation Post-Test Year Plant Additions			Nuclear Generation Post-Test Year Plant Additions			Distribution and IT/Facilities Post-Test Year Plant Additions		
		Total Co. (A)	ACC (B)		Total Co. (C)	ACC (D)		Total Co. (E)	ACC (F)	
1.	Electric Operating Revenues									
2.	Revenues from Base Rates	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -	
3.	Revenues from Surcharges	-	-		-	-		-	-	
4.	Other Electric Revenues	-	-		-	-		-	-	
	Total Electric Operating Revenues	-	-		-	-		-	-	
5.	Electric Fuel and Purchased Power Costs	-	-		-	-		-	-	
6.	Oper Rev Less Fuel & Purch Pwr Costs	-	-		-	-		-	-	
7.	Other Operating Expenses:									
8.	Operations Excluding Fuel Expense	-	-		-	-		-	-	
9.	Maintenance	-	-		-	-		-	-	
	Subtotal	-	-		-	-		-	-	
10.	Depreciation and Amortization	4,391	4,367		590	587		6,015	5,682	
11.	Amortization of Gain	-	-		-	-		-	-	
12.	Administrative and General	-	-		-	-		-	-	
13.	Other Taxes	-	-		-	-		-	-	
14.	Total Other Operating Expense	4,391	4,367		590	587		6,015	5,682	
15.	Operating Income Before Income Tax	(4,391)	(4,367)		(590)	(587)		(6,015)	(5,682)	
16.	Interest Expense	(858)	(853)		1,092	1,086		1,713	1,640	
17.	Taxable Income	(3,533)	(3,514)		(1,682)	(1,673)		(7,728)	(7,322)	
18.	Current Income Tax Rate - 38.10%	(1,346)	(1,339)		(641)	(637)		(2,944)	(2,790)	
19.	Operating Income (line 15 minus line 18)	(3,045)	(3,028)		51	50		(3,071)	(2,892)	
		\$	\$		\$	\$		\$	\$	

PRO FORMA WITNESS:

LUCAS / BLANKENSHIP
1. Jurisdictional
2. Assigned to Production - Demand (DEMPROD1)

CADOGAN / BLANKENSHIP
1. Jurisdictional
2. Assigned to Production - Demand (DEMPROD1)

TETLOW / BLANKENSHIP
1. Jurisdictional
2. Distribution facilities functionalized on Distribution and IT/Facilities functionalized on Wages & Salaries

- (1) Adjustment to Test Year operations to include depreciation, interest expense, property taxes and reduced income tax expense associated with Fossil Generation Post-Test Year Plant Additions. Pro forma adjusted as shown on Schedule B-2, page 1, column 2.
- (2) Adjustment to Test Year operations to include depreciation, interest expense, property taxes and reduced income tax expense associated with Nuclear Generation Post-Test Year Plant Additions. Pro forma adjusted as shown on Schedule B-2, page 1, column 3.
- (3) Adjustment to Test Year operations to include depreciation, interest expense, property taxes and reduced income tax expense associated with Distribution and IT/Facilities Post-Test Year Plant Additions. Pro forma adjusted as shown on Schedule B-2, page 2, column 4.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	Total Co. (G)	ACC (H)	Renewables, Microgrid & Technology Innovation Post-Test Year Plant Additions	Total Co. (I)	ACC (J)	Total Co. (K)	ACC (L)
1.	Electric Operating Revenues	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2.	Revenues from Base Rates	-	-	-	-	-	-	-
3.	Other Electric Revenues	-	-	-	-	-	-	-
4.	Total Electric Operating Revenues	-	-	-	-	-	-	-
5.	Electric Fuel and Purchased Power Costs	-	-	-	-	-	-	-
6.	Oper Rev Less Fuel & Purch Pwr Costs	-	-	-	-	-	-	-
7.	Other Operating Expenses:							
8.	Operations Excluding Fuel Expense	-	-	-	-	-	-	-
9.	Maintenance	-	-	-	-	-	-	-
10.	Subtotal	-	-	-	-	-	-	-
11.	Depreciation and Amortization	-	-	-	-	-	-	-
12.	Amortization of Gain	-	-	-	-	-	-	-
13.	Administrative and General	-	-	-	-	-	-	-
14.	Other Taxes	-	-	-	-	-	-	-
15.	Total Other Operating Expense	-	-	-	-	-	-	-
16.	Operating Income Before Income Tax	-	-	-	-	-	-	-
17.	Interest Expense	2,452	2,266	2,300	2,300	2,300	2,300	2,300
18.	Taxable Income	(2,452)	(2,266)	(928)	(928)	(928)	(928)	(928)
19.	Current Income Tax Rate - 38.10%	(934)	(863)	(354)	(354)	(354)	(354)	(354)
	Operating Income (line 15 minus line 18)	934	863	1,726	1,726	1,726	1,726	1,726

PRO FORMA WITNESS:

FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

(4) Adjustment to Test Year operations to include depreciation, interest expense, property taxes and reduced income tax expense associated with Customer Service Post-Test Year Plant Additions. Pro forma adjusted as shown on Schedule B-2, page 2, column 5.

(5) Adjustment to Test Year operations to include depreciation, interest expense, property taxes and reduced income tax expense associated with Renewables, Microgrid & Technology Innovation Post-Test Year Plant Additions. Pro forma adjusted as shown on Schedule B-2, page 2, column 6.

(6) Adjustment to Test Year operations to include 2017 base fuel and purchased power \$/kWh costs at adjusted Test Year consumption.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(7)		(8)		(9)	
		Total Co. (M)	ACC (N)	Total Co. (O)	ACC (P)	Total Co. (Q)	ACC (R)
1.	Electric Operating Revenues	\$ -	\$ -	\$ -	\$ -	\$ 10,514	\$ 10,514
2.	Revenues from Base Rates	(1,554)	(1,555)	-	-	-	-
3.	Revenues from Surcharges	-	-	-	-	-	-
4.	Other Electric Revenues	(1,554)	(1,555)	-	-	-	-
	Total Electric Operating Revenues	(1,554)	(1,555)	-	-	10,514	10,514
5.	Electric Fuel and Purchased Power Costs	(1,579)	(1,580)	(14,899)	(14,899)	3,647	3,647
6.	Oper Rev Less Fuel & Purch Pwr Costs	25	25	14,899	14,899	6,867	6,867
7.	Other Operating Expenses:						
8.	Operations Excluding Fuel Expense	(25)	(25)	-	-	-	-
9.	Maintenance	(25)	(25)	-	-	-	-
	Subtotal	(25)	(25)	-	-	-	-
10.	Depreciation and Amortization	-	-	-	-	-	-
11.	Amortization of Gain	-	-	-	-	-	-
12.	Administrative and General	-	-	-	-	-	-
13.	Other Taxes	-	-	-	-	-	-
14.	Total Other Operating Expense	(25)	(25)	-	-	-	-
15.	Operating Income Before Income Tax	50	50	14,899	14,899	6,867	6,867
16.	Interest Expense	-	-	-	-	-	-
17.	Taxable Income	50	50	14,899	14,899	6,867	6,867
18.	Current Income Tax Rate - 38.10%	19	19	5,677	5,677	2,616	2,616
19.	Operating Income (line 15 minus line 18)	31	31	9,222	9,222	4,251	4,251

(7) Adjustment to Test Year retail operating revenues and fuel and purchased power expense to remove retail PSA revenue and amortization of deferred fuel related to prior periods.

(8) Adjustment to Test Year retail fuel and purchased power costs to remove retail PSA deferred fuel and mark-to-market accruals.

(9) Adjustment to Test Year operating revenues to reflect normal weather conditions for the ten years ended 12/31/2015.

Supporting Schedules:
N/A

Recan Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(10)		(11)		(12)	
		Annualize Customer Levels		Limited Income Discount (E-3/E-4)		Service Schedule Adjustments	
		Total Co. (S)	ACC (T)	Total Co. (U)	ACC (V)	Total Co. (W)	ACC (X)
1.	Electric Operating Revenues						
2.	Revenues from Base Rates	\$ 15,489	\$ 15,489	\$ (11,900)	\$ (11,900)	\$ -	\$ -
3.	Revenues from Surcharges	-	-	-	-	-	-
4.	Other Electric Revenues					(3,934)	(3,932)
	Total Electric Operating Revenues	15,489	15,489	(11,900)	(11,900)	(3,934)	(3,932)
5.	Electric Fuel and Purchased Power Costs	5,439	5,439	-	-	-	-
6.	Oper Rev Less Fuel & Purch Pwr Costs	10,050	10,050	(11,900)	(11,900)	(3,934)	(3,932)
7.	Other Operating Expenses:						
8.	Operations Excluding Fuel Expense	-	-	-	-	-	-
9.	Maintenance Subtotal	-	-	764	764	-	-
10.	Depreciation and Amortization	-	-	-	-	-	-
11.	Amortization of Gain	-	-	-	-	-	-
12.	Administrative and General	-	-	-	-	-	-
13.	Other Taxes	-	-	-	-	-	-
14.	Total Other Operating Expense	-	-	764	764	-	-
15.	Operating Income Before Income Tax	10,050	10,050	(12,664)	(12,664)	(3,934)	(3,932)
16.	Interest Expense	-	-	-	-	-	-
17.	Taxable Income	10,050	10,050	(12,664)	(12,664)	(3,934)	(3,932)
18.	Current Income Tax Rate - 38.10%	3,829	3,829	(4,825)	(4,825)	(1,499)	(1,498)
19.	Operating Income (line 15 minus line 18)	\$ 6,221	\$ 6,221	\$ (7,839)	\$ (7,839)	\$ (2,435)	\$ (2,434)

PRO FORMA WITNESS:
FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

MIESSNER
1. ACC Specific
2. Revenues are class specific and Expenses are Assigned to System Benefits. (Retail ERGSYSBEN)

MIESSNER
1. ACC Specific
2. Functionalized on PT&D Distribution Only

(10) Adjustment to Test Year operating revenues to reflect the annualization of customer levels at 12/31/2015.

(11) Adjustment to Test Year operating revenues to reflect the increase in limited income customer discounts from the Test Year through 6/30/2017.

(12) Adjustment to Test Year operating other revenues to reflect changes in service schedule charges.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(13)		(14)		(15)	
		AG-1 Adjustment		Include Amortization of AG-1 Deferral		Remove Amortization of Pension/OPEB Deferral	
		Total Co. (Y)	ACC (Z)	Total Co. (AA)	ACC (AB)	Total Co. (AC)	ACC (AD)
1.	Electric Operating Revenues						
2.	Revenues from Base Rates	\$ 11,889	\$ 11,889	\$ -	\$ -	\$ -	\$ -
3.	Revenues from Surcharges	-	-	-	-	-	-
4.	Other Electric Revenues	-	-	-	-	-	-
	Total Electric Operating Revenues	11,889	11,889	-	-	-	-
5.	Electric Fuel and Purchased Power Costs	194	194	-	-	-	-
6.	Oper Rev Less Fuel & Purch Pwr Costs	11,695	11,695	-	-	-	-
7.	Other Operating Expenses:						
8.	Operations Excluding Fuel Expense	-	-	-	-	(4,238)	(4,238)
9.	Maintenance	-	-	-	-	-	-
	Subtotal	-	-	-	-	(4,238)	(4,238)
10.	Depreciation and Amortization	-	-	2,787	2,787	-	-
11.	Amortization of Gain	-	-	-	-	-	-
12.	Administrative and General	-	-	-	-	-	-
13.	Other Taxes	-	-	-	-	-	-
14.	Total Other Operating Expense	-	-	2,787	2,787	(4,238)	(4,238)
15.	Operating Income Before Income Tax	11,695	11,695	(2,787)	(2,787)	4,238	4,238
16.	Interest Expense	-	-	196	196	-	-
17.	Taxable Income	11,695	11,695	(2,983)	(2,983)	4,238	4,238
18.	Current Income Tax Rate - 38.10%	4,456	4,456	(1,136)	(1,136)	1,615	1,615
19.	Operating Income (line 15 minus line 18)	7,239	7,239	(1,651)	(1,651)	2,623	2,623
PRO FORMA WITNESS:		MIESSNER		MIESSNER		BLANKENSHIP	
FUNCTIONALIZATION OF PRO		1. ACC Specific		1. ACC Specific		1. ACC Specific	
FORMA AND ALLOCATION		2. Revenues and expenses are class		2. Revenues are class specific.		2. Functionalized on Wages & Salaries	
FACTOR: [WITNESS: SNOOK]		specific.		3. Expenses are assigned to Production Energy (GEN, SERV, SPECIFIC).			

(13) Adjustment to Test Year retail revenue to adjust for AG-1 customers unrecovered revenues.

(14) Adjustment to Test Year operations to include the estimated amortization of the AG-1 deferral amount from 6/30/2016 to 6/30/2017 per Decision No. 75322 over a 5 year period. Pro forma adjusted as shown on Schedule B-2, page 3, column 7.

(15) Adjustment to Test Year operations to remove 6 months of amortization of the Pension/OPEB deferral authorized in Decision No. 71448.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(16)		(17)		(18)	
		Total Co. (AE)	ACC (AF)	Total Co. (AG)	ACC (AH)	Total Co. (AI)	ACC (AJ)
1.	Electric Operating Revenues						
2.	Revenues from Base Rates	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3.	Revenues from Surcharges	-	-	-	-	(7,545)	(7,545)
4.	Other Electric Revenues	-	-	(14)	(14)	-	-
	Total Electric Operating Revenues	-	-	(14)	(14)	(7,545)	(7,545)
5.	Electric Fuel and Purchased Power Costs	-	-	-	-	-	-
6.	Oper Rev Less Fuel & Purch Pwr Costs	-	-	(14)	(14)	(7,545)	(7,545)
7.	Other Operating Expenses:						
8.	Operations Excluding Fuel Expense	(4,038)	(4,038)	(1,033)	(1,033)	(7,545)	(7,545)
9.	Maintenance Subtotal	(4,038)	(4,038)	(1,033)	(1,033)	(7,545)	(7,545)
10.	Depreciation and Amortization	-	-	(27)	(27)	-	-
11.	Amortization of Gain	-	-	-	-	-	-
12.	Administrative and General	-	-	-	-	-	-
13.	Other Taxes	-	-	(18)	(18)	-	-
14.	Total Other Operating Expense	(4,038)	(4,038)	(1,078)	(1,078)	(7,545)	(7,545)
15.	Operating Income Before Income Tax	4,038	4,038	1,064	1,064	-	-
16.	Interest Expense	-	-	-	-	-	-
17.	Taxable Income	4,038	4,038	1,064	1,064	-	-
18.	Current Income Tax Rate - 38.10%	1,538	1,538	405	405	-	-
19.	Operating Income (line 15 minus line 18)	2,500	2,500	659	659	-	-

PRO FORMA WITNESS:

FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

BLANKENSHIP
1. ACC Specific
2. Assigned to Production - Demand (Retail DEMPROD1)

BLANKENSHIP
1. ACC Specific
2. Assigned to Customer Accounts (CUSTNUM_A)

BLANKENSHIP
1. ACC Specific
2. Revenues are class specific and expenses are functionalized on Distribution of W&S

(16) Adjustment to amortize the gain of the Amonix and Star Center Patent investment over 3 years. This adjustment also includes the amortization of the deferred gain on the Kyrene to Knox transmission line transaction as authorized in Decision No. 74991.

(17) Adjustment to Test Year operations for reduced expenses related to closure of Customer Service offices and for the increase cost of paystallion fees.

(18) Adjustment to Test Year operations to remove the Regulatory Assessment surcharges from operating revenues and expenses.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(19)			(20)			(21)		
		Total Co. (AK)	ACC (AL)	Remove and Transfer Test Year Transmission Cost Adjustor (TCA)	Total Co. (AM)	ACC (AN)	Remove and Transfer Test Year Cost Recovery Mechanism (LCFR)	Total Co. (AO)	Remove and Transfer Test Year Environmental Improvement Surcharge (EIS)	ACC (AP)
1.	Electric Operating Revenues									
2.	Revenues from Base Rates	\$ (128,782)	\$ (128,603)		\$ (45,988)	\$ (45,988)		\$ (2,461)	\$ (2,456)	
3.	Revenues from Surcharges									
4.	Other Electric Revenues	(128,782)	(128,603)		(45,988)	(45,988)		(2,461)	(2,456)	
	Total Electric Operating Revenues									
5.	Electric Fuel and Purchased Power Costs	(128,782)	(128,603)		(45,988)	(45,988)		(2,461)	(2,456)	
6.	Oper Rev Less Fuel & Purch Pwr Costs									
7.	Other Operating Expenses:									
8.	Operations Excluding Fuel Expense	-	-		-	-		-	-	
9.	Maintenance	-	-		-	-		-	-	
	Subtotal									
10.	Depreciation and Amortization	-	-		-	-		-	-	
11.	Amortization of Gain	-	-		-	-		-	-	
12.	Administrative and General	-	-		-	-		-	-	
13.	Other Taxes	-	-		-	-		-	-	
14.	Total Other Operating Expense									
15.	Operating Income Before Income Tax	(128,782)	(128,603)		(45,988)	(45,988)		(2,461)	(2,456)	
16.	Interest Expense									
17.	Taxable Income	(128,782)	(128,603)		(45,988)	(45,988)		(2,461)	(2,456)	
18.	Current Income Tax Rate - 38.10%	(49,066)	(49,998)		(17,521)	(17,521)		(938)	(936)	
19.	Operating Income (line 15 minus line 18)	\$ (79,716)	\$ (79,605)		\$ (28,467)	\$ (28,467)		\$ (1,523)	\$ (1,520)	
	PRO FORMA WITNESS:									
	FUNCTIONALIZATION OF PRO									
	FORMA AND ALLOCATION									
	FACTOR: [WITNESS: SNOOK]									

BLANKENSHIP
1. Jurisdictional
2. Revenues are class specific

BLANKENSHIP
1. ACC Specific
2. Revenues are class specific

BLANKENSHIP
1. Jurisdictional
2. Revenues are class specific

(19) Adjustment to Test Year operations to remove the Transmission Cost Adjustor from operating revenues and transfer it to base rates.

(20) Adjustment to Test Year operations to remove the LCFR mechanism from operating revenues and transfer it to base rates.

(21) Adjustment to Test Year operations to remove the EIS from operating revenues and transfer it to base rates.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted INCOME STATEMENT PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(22)		(23)		(24)	
		Total Co. (AQ)	ACC (AR)	Total Co. (AS)	ACC (AT)	Total Co. (AU)	ACC (AV)
1.	Electric Operating Revenues						
2.	Revenues from Base Rates	\$ (51,369)	\$ (51,262)	\$ (113,286)	\$ (113,243)	\$ (57,675)	\$ (57,588)
3.	Revenues from Surcharges						
4.	Other Electric Revenues	(51,369)	(51,262)	(113,286)	(113,243)	(57,675)	(57,588)
	Total Electric Operating Revenues						
5.	Electric Fuel and Purchased Power Costs						
6.	Oper Rev Less Fuel & Purch Pwr Costs	(51,369)	(51,262)	(44,870)	(44,853)		
				(68,416)	(68,390)	(57,675)	(57,588)
	Other Operating Expenses:						
7.	Operations Excluding Fuel Expense	(41,369)	(41,283)	(30,859)	(30,847)		
8.	Maintenance						
9.	Subtotal	(41,369)	(41,283)	(30,859)	(30,847)		
10.	Depreciation and Amortization						
11.	Amortization of Gain						
12.	Administrative and General						
13.	Other Taxes						
14.	Total Other Operating Expense	(41,369)	(41,283)	(30,859)	(30,847)		
		(10,000)	(9,979)	(37,557)	(37,543)	(57,675)	(57,588)
15.	Operating Income Before Income Tax						
16.	Interest Expense						
17.	Taxable Income	(10,000)	(9,979)	(37,557)	(37,543)	(57,675)	(57,588)
18.	Current Income Tax Rate - 38.10%	(3,810)	(3,802)	(14,309)	(14,304)	(21,974)	(21,941)
19.	Operating Income (line 15 minus line 18)	(6,190)	(6,177)	(23,248)	(23,239)	(35,701)	(35,647)

PRO FORMA WITNESS:

FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

- (22) Adjustment to Test Year operations to remove the DSMAC from operating revenues and transfer a portion of it to base rates.
- (23) Adjustment to Test Year operations to remove the REAC from operating revenues and transfer a portion of the expenses related to AZ Sun, Schools and Government and the Community Power Project to base rates.
- (24) Adjustment to Test Year operations to remove the Four Corners Rate Rider from operating revenues and transfer a portion to base rates.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted INCOME STATEMENT PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(25)		(26)		(27)	
		Four Corners Deferral True Up		Remove Cholla 2 Non-Fuel / Non-Payroll Costs		Adjust Cholla Unit 2 Regulatory Asset Amortization	
		Total Co. (AW)	ACC (AX)	Total Co. (AY)	ACC (AZ)	Total Co. (BA)	ACC (BB)
1.	Electric Operating Revenues						
2.	Revenues from Base Rates	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3.	Revenues from Surcharges	-	-	-	-	-	-
4.	Other Electric Revenues	-	-	-	-	-	-
	Total Electric Operating Revenues	-	-	-	-	-	-
5.	Electric Fuel and Purchased Power Costs	-	-	-	-	-	-
6.	Oper Rev Less Fuel & Purch Pwr Costs	-	-	-	-	-	-
7.	Other Operating Expenses:						
8.	Operations Excluding Fuel Expense	-	-	(5,656)	(5,625)	-	-
9.	Maintenance	-	-	(2,219)	(2,207)	-	-
	Subtotal	-	-	(7,875)	(7,832)	-	-
10.	Depreciation and Amortization	1,388	1,388	(7,144)	(7,105)	-	-
11.	Amortization of Gain	-	-	-	-	-	-
12.	Administrative and General	-	-	-	-	-	-
13.	Other Taxes	-	-	(2,336)	(2,323)	-	-
14.	Total Other Operating Expense	1,388	1,388	(17,355)	(17,260)	-	-
15.	Operating Income Before Income Tax	(1,388)	(1,388)	17,355	17,260	-	-
16.	Interest Expense	-	-	-	-	-	-
17.	Taxable Income	(1,388)	(1,388)	17,355	17,260	-	-
18.	Current Income Tax Rate - 38.10%	(529)	(529)	6,612	6,576	-	-
19.	Operating Income (line 15 minus line 18)	(859)	(859)	10,743	10,684	-	-

PRO FORMA WITNESS:
FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

BLANKENSHIP
1. Jurisdictional
2. Assigned to Production - Demand
(DEMPROD1)

(25) Adjustment to Test Year operations to include the true-up of the Four Corners deferral balance.

(26) Adjustment to Test Year operations to remove Cholla Unit 2 costs due to the shut down of the unit in October of 2015.

(27) Adjustment to Test Year operations to include the amortization costs related to the closure of Cholla Unit 2 and the accrual of remaining removal costs for final retirement in 2033.

Supporting Schedules:
N/A

Rucap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(28)		(29)		(30)	
		Include West Phoenix Unit 4 Regulatory Disallowance		Include Interest Expense on Customer Deposits		Adjust Depreciation Expense - 2016 Depreciation Rate Study	
		Total Co. (BC)	ACC (BD)	Total Co. (BE)	ACC (BF)	Total Co. (BG)	ACC (BH)
1.	Electric Operating Revenues						
2.	Revenues from Base Rates	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3.	Revenues from Surcharges	-	-	-	-	-	-
4.	Other Electric Revenues	-	-	-	-	-	-
	Total Electric Operating Revenues	-	-	-	-	-	-
5.	Electric Fuel and Purchased Power Costs	-	-	-	-	-	-
6.	Oper Rev Less Fuel & Purch Pwr Costs	-	-	-	-	-	-
	Other Operating Expenses:						
7.	Operations Excluding Fuel Expense	-	-	443	443	-	-
8.	Maintenance	-	-	-	-	-	-
9.	Subtotal	-	-	443	443	-	-
10.	Depreciation and Amortization	(329)	(327)	-	-	57,020	55,166
11.	Amortization of Gain	-	-	-	-	-	-
12.	Administrative and General	-	-	-	-	-	-
13.	Other Taxes	-	-	-	-	-	-
14.	Total Other Operating Expense	(329)	(327)	443	443	57,020	55,166
15.	Operating Income Before Income Tax	329	327	(443)	(443)	(57,020)	(55,166)
16.	Interest Expense	(148)	(148)	-	-	-	-
17.	Taxable Income	477	475	(443)	(443)	(57,020)	(55,166)
18.	Current Income Tax Rate - 38.10%	182	181	(169)	(169)	(21,725)	(21,018)
19.	Operating Income (line 15 minus line 18)	147	146	(274)	(274)	(35,295)	(34,148)

PRO FORMA WITNESS:

FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

BLANKENSHIP
1. Jurisdictional
2. Assigned to Production - Demand (DEMPROD1)

BLANKENSHIP
1. ACC Specific
2. Assigned to Customer Accounts (CUSTDEP)

BLANKENSHIP
1. Jurisdictional
2. Specific assigned to PT&D, General and Intangible functionalized on Wages & Salaries

(28) Adjustment to Test Year operations to reflect amortization of regulatory disallowance of West Phoenix Unit 4 over the remaining life of the plant as required by previous ACC Decision Nos. 67744 and 69663. Pro forma adjusted as shown on Schedule B-2, page 3, column 8.

(29) Adjustment to Test Year operations to reflect the operating income impact of interest on customer deposits using January 2016 interest rates.

(30) Adjustment to Test Year operations to reflect depreciation expense based on the 2016 Depreciation Rate Study.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(31)			(32)			(33)		
		Decommissioning and Spent Fuel Costs			Annualize Payroll Expense			Normalize Employee Benefits		
		Total Co. (BI)	ACC (BJ)		Total Co. (BK)	ACC (BL)		Total Co. (BM)	ACC (BN)	
1.	Electric Operating Revenues									
2.	Revenues from Base Rates	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -	
3.	Revenues from Surcharges	-	-		-	-		-	-	
4.	Other Electric Revenues	-	-		-	-		-	-	
	Total Electric Operating Revenues	-	-		-	-		-	-	
5.	Electric Fuel and Purchased Power Costs	(962)	(956)		-	-		-	-	
6.	Oper Rev Less Fuel & Purch Pwr Costs	962	956		-	-		-	-	
	Other Operating Expenses:									
7.	Operations Excluding Fuel Expense	-	-		4,236	3,914		8,400	7,762	
8.	Maintenance	-	-		1,092	1,009		-	-	
9.	Subtotal	-	-		5,328	4,923		8,400	7,762	
10.	Depreciation and Amortization	(13,383)	(13,292)		-	-		-	-	
11.	Amortization of Gain	-	-		-	-		-	-	
12.	Administrative and General	-	-		-	-		-	-	
13.	Other Taxes	-	-		-	-		-	-	
14.	Total Other Operating Expense	(13,383)	(13,292)		5,328	4,923		8,400	7,762	
15.	Operating Income Before Income Tax	14,345	14,248		(5,328)	(4,923)		(8,400)	(7,762)	
16.	Interest Expense	-	-		-	-		-	-	
17.	Taxable Income	14,345	14,248		(5,328)	(4,923)		(8,400)	(7,762)	
18.	Current Income Tax Rate - 38.10%	5,465	5,428		(2,030)	(1,876)		(3,200)	(2,957)	
19.	Operating Income (line 15 minus line 18)	\$ 8,880	\$ 8,820		\$ (3,298)	\$ (3,047)		\$ (5,200)	\$ (4,805)	
	PRO FORMA WITNESS:	BLANKENSHIP			BLANKENSHIP			BLANKENSHIP		
	FUNCTIONALIZATION OF PRO	1. Jurisdictional			1. Jurisdictional			1. Jurisdictional		
	FORMA AND ALLOCATION	2. Assigned to System Benefits (ERGSYSBEN)			2. Functionalized on Wages & Salaries			2. Functionalized on Wages & Salaries		
	FACTOR: [WITNESS: SNOOK]									

(31) Adjustment to Test Year operations to reflect updated decommissioning funding levels for Palo Verde and updated ISFSI expense.

(32) Adjustment to Test Year operations to reflect the annualization of payroll, payroll tax and non-retirement benefit expenses to March 2016 employee levels for performance review and March 2017 Union employees.

(33) Adjustment to Test Year operations to reflect the current December 2015 actuarial valuation of retirement program expenses.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted INCOME STATEMENT PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(34)		(35)		(36)	
		Remove Supplemental Excess Benefit Retirement Plan Expense (SERP)		Remove Stock Compensation		Normalize Cash Incentive	
		Total Co. (BO)	ACC (BP)	Total Co. (BQ)	ACC (BR)	Total Co. (BS)	ACC (BT)
1.	Electric Operating Revenues						
2.	Revenues from Base Rates	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3.	Revenues from Surcharges	-	-	-	-	-	-
4.	Other Electric Revenues	-	-	-	-	-	-
	Total Electric Operating Revenues	-	-	-	-	-	-
5.	Electric Fuel and Purchased Power Costs	-	-	-	-	-	-
6.	Oper Rev Less Fuel & Purch Pwr Costs	-	-	-	-	-	-
	Other Operating Expenses:						
7.	Operations Excluding Fuel Expense	(7,808)	(7,215)	(15,753)	(14,556)	(2,029)	(1,875)
8.	Maintenance	-	-	-	-	(50)	(47)
9.	Subtotal	(7,808)	(7,215)	(15,753)	(14,556)	(2,079)	(1,922)
10.	Depreciation and Amortization	-	-	-	-	-	-
11.	Amortization of Gain	-	-	-	-	-	-
12.	Administrative and General	-	-	-	-	(928)	(858)
13.	Other Taxes	-	-	-	-	-	-
	Total Other Operating Expense	(7,808)	(7,215)	(15,753)	(14,556)	(3,007)	(2,780)
14.							
15.	Operating Income Before Income Tax	7,808	7,215	15,753	14,556	3,007	2,780
16.	Interest Expense	-	-	-	-	-	-
17.	Taxable Income	7,808	7,215	15,753	14,556	3,007	2,780
18.	Current Income Tax Rate - 38.10%	2,975	2,749	6,002	5,546	1,146	1,059
19.	Operating Income (line 15 minus line 18)	\$ 4,833	\$ 4,466	\$ 9,751	\$ 9,010	\$ 1,861	\$ 1,721

PRO FORMA WITNESS:

FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

BLANKENSHIP
1. Jurisdictional
2. Functionalized on Wages & Salaries

BLANKENSHIP
1. Jurisdictional
2. Functionalized on Wages & Salaries

BLANKENSHIP
1. Jurisdictional
2. Functionalized on Wages & Salaries

(34) Adjustment to Test Year operations to remove Supplemental Excess Benefit Retirement Plan Expense ("SERP")

(35) Adjustment to Test Year operations to remove stock compensation expense.

(36) Adjustment to Test Year operations to normalize the cash incentive program over a 3 year period.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(37)		(38)		(39)	
		Normalize Income Tax Expense/Interest Synchronization		Annualize Property Tax Expense		Amortize Property Tax Deferral	
		Total Co. (BU)	ACC (BV)	Total Co. (BW)	ACC (BX)	Total Co. (BY)	ACC (BZ)
1.	Electric Operating Revenues						
2.	Revenues from Base Rates	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3.	Revenues from Surcharges	-	-	-	-	-	-
4.	Other Electric Revenues	-	-	-	-	-	-
	Total Electric Operating Revenues	-	-	-	-	-	-
5.	Electric Fuel and Purchased Power Costs	-	-	-	-	-	-
6.	Oper Rev Less Fuel & Purch Pwr Costs	-	-	-	-	-	-
	Other Operating Expenses:						
7.	Operations Excluding Fuel Expense	-	-	-	-	-	-
8.	Maintenance	-	-	-	-	-	-
9.	Subtotal	-	-	-	-	-	-
10.	Depreciation and Amortization	-	-	-	-	8,898	8,898
11.	Amortization of Gain	-	-	-	-	-	-
12.	Administrative and General	-	-	-	-	-	-
13.	Other Taxes	-	-	28,494	23,864	8,898	8,898
14.	Total Other Operating Expense	-	-	28,494	23,864	8,898	8,898
15.	Operating Income Before Income Tax	-	-	(28,494)	(23,864)	(8,898)	(8,898)
16.	Interest Expense	10,169	9,099	-	-	541	541
17.	Taxable Income	(10,169)	(9,099)	(28,494)	(23,864)	(9,439)	(9,439)
18.	Current Income Tax Rate - 38.10%	(3,874)	(3,467)	(10,856)	(9,092)	(3,596)	(3,596)
19.	Operating Income (line 15 minus line 18)	\$ 3,874	\$ 3,467	\$ (17,638)	\$ (14,772)	\$ (5,302)	\$ (5,302)

PRO FORMA WITNESS:

FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

BLANKENSHIP
1. Jurisdictional
2. Calculated as the weighted average of "Other Tax Items"

BLANKENSHIP
1. Jurisdictional
2. Functionalized on P T & D

BLANKENSHIP
1. ACC Specific
2. Functionalized on P T & D

(37) Adjustment to Test Year operations for top down income tax true-ups consistent with Decision Nos. 69663, 71448 and 73183 using the 12/31/2015 rate base and cost of long-term debt. Tax true-ups are reflected as interest in this adjustment.

(38) Adjustment to Test Year operations to annualize property taxes calculated using the anticipated 2016 tax assessment ratio and tax rate.

(39) Adjustment to amortize the property tax deferral as authorized in Decision No. 73183 over 10 years. Pro forma adjusted as shown on Schedule B-2, page 3, column 9.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(40)	(41)	(42)
		Annualize Four Corners Power Plant Coal Reclamation Costs	Annualize Navajo Power Plant Coal Reclamation Costs	Adjust Cash Working Capital for Cost of Service Pro Formas
		Total Co. (CA)	Total Co. (CC)	Total Co. (CE)
1.	Electric Operating Revenues			
2.	Revenues from Base Rates	\$ -	\$ -	\$ -
3.	Revenues from Surcharges	-	-	-
4.	Other Electric Revenues	-	-	-
	Total Electric Operating Revenues	-	-	-
5.	Electric Fuel and Purchased Power Costs	(6,559)	(6,514)	-
6.	Oper Rev Less Fuel & Purch Pwr Costs	6,559	6,514	-
	Other Operating Expenses:			
7.	Operations Excluding Fuel Expense	-	-	-
8.	Maintenance	-	-	-
9.	Subtotal	-	-	-
10.	Depreciation and Amortization	-	-	-
11.	Amortization of Gain	-	-	-
12.	Administrative and General	-	-	-
13.	Other Taxes	-	-	-
14.	Total Other Operating Expense	-	-	-
15.	Operating Income Before Income Tax	6,559	(653)	-
16.	Interest Expense	-	-	(396)
17.	Taxable Income	6,559	6,514	396
18.	Current Income Tax Rate - 38.10%	2,499	2,482	151
19.	Operating Income (line 15 minus line 18)	4,060	4,032	(151)
	PRO FORMA WITNESS:			
	FUNCTIONALIZATION OF PRO FORM AND ALLOCATION FACTOR: [WITNESS: SNOOK]			
		BLANKENSHIP	BLANKENSHIP	BLANKENSHIP
		1. Jurisdictional	1. Jurisdictional	1. Jurisdictional
		2. Assigned to System Benefits (ERGSYSBEN)	2. Assigned to System Benefits (ERGSYSBEN)	2. Functionalized on Wages & Salaries

(40) Adjustment to Test Year operations to reflect most recent Four Corners Power Plant coal reclamation study.

(41) Adjustment to Test Year operations to reflect the most recent Navajo Power Plant coal reclamation study.

(42) Adjustment to Test Year interest expense for cash working capital rate base pro forma adjustment. Pro forma adjusted as shown on Schedule B-2, page 4, column 10.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	(43)			(44)			(45)		
		Total Co. (CG)	ACC (CH)	Transfer Palo Verde Unit 2 Lease Reduction to Base Rates	Total Co. (CI)	ACC (CJ)	Normalize Nuclear Maintenance Expense	Total Co. (CK)	ACC (CL)	Normalize Fossil Maintenance Expense
1.	Electric Operating Revenues	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -	
2.	Revenues from Base Rates	-	-		-	-		-	-	
3.	Revenues from Surcharges	-	-		-	-		-	-	
4.	Other Electric Revenues	-	-		-	-		-	-	
	Total Electric Operating Revenues	-	-		-	-		-	-	
5.	Electric Fuel and Purchased Power Costs	-	-		-	-		-	-	
6.	Oper Rev Less Fuel & Purch Pwr Costs	-	-		-	-		-	-	
7.	Other Operating Expenses:									
8.	Operations Excluding Fuel Expense	(21,491)	(21,375)		248	246		1,285	1,276	
9.	Maintenance Subtotal	(21,491)	(21,375)		248	246		1,285	1,276	
10.	Depreciation and Amortization	-	-		-	-		-	-	
11.	Amortization of Gain	4,574	4,549		-	-		-	-	
12.	Administrative and General	-	-		-	-		-	-	
13.	Other Taxes	-	-		-	-		-	-	
14.	Total Other Operating Expense	(16,917)	(16,826)		248	246		1,285	1,276	
15.	Operating Income Before Income Tax	16,917	16,826		(248)	(246)		(1,285)	(1,276)	
16.	Interest Expense	-	-		-	-		-	-	
17.	Taxable Income	16,917	16,826		(248)	(246)		(1,285)	(1,276)	
18.	Current Income Tax Rate - 38.10%	6,445	6,411		(94)	(94)		(490)	(486)	
19.	Operating Income (line 15 minus line 18)	\$ 10,472	\$ 10,415		\$ (154)	\$ (152)		\$ (795)	\$ (790)	

PRO FORMA WITNESS:

FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

	BLANKENSHIP	BLANKENSHIP	BLANKENSHIP
1. Jurisdictional	1. Jurisdictional	1. Jurisdictional	1. Jurisdictional
2. Assigned to Production Demand (DEMPROD1)	2. Assigned to Production - Energy (ENERGY1)	2. Assigned to Production - Energy (ENERGY1)	2. Assigned to Production - Energy (ENERGY1)

Adjustment to the Test Year operation to include the net expense associated with the reduced Palo Verde Unit 2 lease amount.

Adjustment to Test Year operations to reflect normalization of nuclear production maintenance expense.

Adjustment to Test Year operations to reflect normalization of fossil production maintenance expense.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

Line No.	Description	50% of EEI Dues and D&O Insurance		Annualize Solar Partner Program Expense		Remove Out of Period and Miscellaneous Items	
		Total Co. (CM)	ACC (CN)	Total Co. (CO)	ACC (CP)		
1.	Electric Operating Revenues						
2.	Revenues from Base Rates						
3.	Revenues from Surcharges						
4.	Other Electric Revenues						
	Total Electric Operating Revenues						
5.	Electric Fuel and Purchased Power Costs						
6.	Oper Rev Less Fuel & Purch Pwr Costs						
7.	Other Operating Expenses:						
8.	Operations Excluding Fuel Expense	(1,070)	528		528		
9.	Maintenance						
	Subtotal	(1,070)	528		528		
10.	Depreciation and Amortization						
11.	Amortization of Gain						
12.	Administrative and General						
13.	Other Taxes						
14.	Total Other Operating Expense	(1,070)	528		528	(1,633)	(1,509)
15.	Operating Income Before Income Tax	1,070	(528)		(528)	1,633	1,509
16.	Interest Expense						
17.	Taxable Income						
18.	Current Income Tax Rate - 38.10%						
19.	Operating Income (line 15 minus line 18)						

(46) Adjustment to Test Year operations to annualize solar partner program expense as authorized in C

(47) Adjustment to Test Year operations to remove out of period and miscellaneous items from the Test miscellaneous advertising, other general expenses, etc.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY
RUCO Adjusted Income Statement PRO FORMA ADJUSTMENTS
(\$000)

(48)

		Total Income Statement Adjustments	
Line No.	Description	(a) Total Co. (CO)	(a) ACC (CR)
1.	Electric Operating Revenues		
2.	Revenues from Base Rates	\$ 28,503	\$ 28,503
3.	Revenues from Surcharges	(408,860)	(408,240)
4.	Other Electric Revenues	(3,948)	(3,946)
	Total Electric Operating Revenues	(384,105)	(383,683)
5.	Electric Fuel and Purchased Power Costs	(100,561)	(100,498)
6.	Oper Rev Less Fuel & Purch Pwr Costs	(283,544)	(283,185)
7.	Other Operating Expenses:		
8.	Operations Excluding Fuel Expense	(128,212)	(126,983)
9.	Maintenance	1,095	1,016
	Subtotal	(127,117)	(125,967)
10.	Depreciation and Amortization	61,345	59,263
11.	Amortization of Gain	4,574	4,549
12.	Administrative and General	(2,561)	(2,367)
13.	Other Taxes	26,140	21,523
14.	Total Other Operating Expense	(37,619)	(42,999)
15.	Operating Income Before Income Tax	(245,925)	(240,186)
16.	Interest Expense	17,028	15,731
17.	Taxable Income	(262,953)	(255,918)
18.	Current Income Tax Rate - 38.10%	(100,185)	(97,505)
19.	Operating Income (line 15 minus line 18)	<u>\$ (145,740)</u>	<u>\$ (142,681)</u>

PRO FORMA WITNESS:

FUNCTIONALIZATION OF PRO
FORMA AND ALLOCATION
FACTOR: [WITNESS: SNOOK]

ecision No. 74878.

! Year period including consulting fees.

Supporting Schedules:
N/A

Recap Schedules:
(a) RUCO C-1

ARIZONA PUBLIC SERVICE COMPANY

DOCKET NO. E-01345A-16-0036

DIRECT TESTIMONY
OF
JOHN CASSIDY, CRRA

ON BEHALF OF THE
RESIDENTIAL UTILITY CONSUMER OFFICE

DECEMBER 22, 2016

TABLE OF CONTENTS

EXECUTIVE SUMMARY	III
INTRODUCTION	1
SUMMARY OF TESTIMONY AND RECOMMENDATIONS	2
ECONOMIC PRINCIPLES APPLICABLE TO ARIZONA.....	5
GENERAL ECONOMIC CONDITIONS	7
CAPITAL STRUCTURE AND COST OF DEBT.....	36
SELECTION OF PROXY GROUP.....	37
DCF ANALYSIS	40
CAPM ANALYSIS	43
CE ANALYSIS.....	47
RUCO RESPONSE TO COMPANY'S COST OF CAPITAL WITNESS DR. BENTE VILLADSEN	49
FAIR VALUE RATE OF RETURN.....	73
CONCLUSION AND RECOMMENDATIONS.....	74
ATTACHMENTS	
Attachment 1	JOHN A. CASSIDY – REGULATORY EXPERIENCE
Attachment 2	VALUE LINE INVESTMENT SURVEY
Attachment 3	YAHOO ANALYST ESTIMATES
SCHEDULES	
JAC-1	WEIGHTED AVERAGE COST OF CAPITAL
JAC-1a	FAIR VALUE RATE OF RETURN
JAC-2	COST OF COMMON EQUITY

JAC-3	DISCOUNTED CASH FLOW MODEL
JAC-4	CAPITAL ASSET PRICING MODEL
JAC-5	COMPARABLE EARNINGS
JAC-6	ECONOMIC INDICATORS

EXHIBITS

JAC-A	FEDERAL RESERVE BANK OF CLEVELAND – EXPECTED INFLATION RATE (10-YEAR)
JAC-B	BLUE CHIP ECONOMIC INDICATORS – FORECASTS OF 10-YEAR TREASURY RATES
JAC-C	YIELD SPREAD ANALYSIS
JAC-D	ANALYSIS OF STOCK MARKET VOLATILITY AS MEASURED BY THE VIX INDEX

EXECUTIVE SUMMARY

RUCO recommends that the Commission adopt a 7.53 percent overall rate of return for Arizona Public Service Company ("APS," or "Company"), based upon (i) RUCO's proposed capital structure consisting of 44.20 percent long-term debt, and 55.80 percent common equity, (ii) an embedded 5.13 percent cost of long-term debt, and (iii) RUCO's recommended 9.42 percent cost of common equity, as shown below:

	<u>Weight</u>	<u>Cost</u>	<u>Weighted Cost</u>
Long-Term Debt	44.20 %	5.13 %	2.27 %
Common Equity	55.80 %	9.42 %	<u>5.26 %</u>
Overall Rate of Return			<u>7.53 %</u>

RUCO's 9.42 percent cost of equity is derived from estimates obtained from three cost of equity estimation models, with the results obtained from the Discounted Cash Flow and Comparable Earnings Models assigned a weighting of 40 percent, and the results obtained from the Capital Asset Pricing Model assigned a weighting of 20 percent, as follows:

	<u>Cost Estimate</u>	<u>Weight Factor</u>	<u>Weighted Average Cost Estimate</u>
Discounted Cash Flow	8.85 %	40 %	3.54 %
Capital Asset Pricing Model	7.28 %	20 %	1.46 %
Comparable Earnings	<u>11.06 %</u>	40 %	<u>4.42 %</u>
Average Cost of Equity	<u>9.06 %</u>		
Weighted Average Cost of Equity			<u>9.42 %</u>

RUCO recommends that the Commission adopt a Fair Value Rate of Return ("FVROR") of 5.36 percent for APS. RUCO's recommended FVROR assigns a 1.00 percent cost rate to the fair value increment of the Company's FVRB.

1 I will also demonstrate that the 10.50 percent cost of equity recommendation put forth by APS
2 witness, Dr. Bente Villadsen, significantly over-states the Company's actual cost of equity.

3
4 In addition, I demonstrate that the 10.8 percent cost of equity estimate which Dr. Villadsen relies
5 upon as the upper bound of her 10.0 percent – 10.8 percent reasonable range for APS is
6 overstated by 40 basis points.

I. INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is John A. Cassidy. I am a Public Utilities Analyst V with the Residential Utility Consumers Office ("RUCO"). My business address is 1110 W. Washington Street, Suite 220, Phoenix, AZ.

Q. Please describe your educational background and professional experience.

A. I hold a Bachelor of Arts degree in History from Arizona State University, a Master of Library Science degree from the University of Arizona, and a Master of Business Administration degree with an emphasis in Finance from Arizona State University. I have been awarded the professional designation Certified Rate of Return Analyst ("CRR") by the Society of Utility and Regulatory Financial Analysts ("SURFA") based upon experience and the successful completion of a written examination. I have eight years of professional regulatory work experience as a Public Utilities Analyst, both with RUCO and the Arizona Corporation Commission ("ACC") Staff, and have testified in numerous rate proceedings as a cost of capital witness before this Commission. Additionally, I have attended utility related seminars sponsored by both SURFA and the National Association of Regulatory Utility Commissioners (NARUC). Attachment 1 contains a summary of my prior regulatory work experience.

Q. Please state the purpose of your testimony.

A. The purpose of my testimony is to present RUCO's recommendations for the establishment of a fair value rate of return. For purposes of establishing a fair value rate of return on its invested capital in this proceeding, the Company has elected to use the

average of its original cost rate base (OCRB) and its reconstruction cost new depreciation (RCND) as its fair value rate base (FVRB).

Q. Will RUCO provide direct testimony on the rate base, operating income and rate design issues in this proceeding?

A. Yes. RUCO witnesses, Mr. Frank W. Radigan and Mr. Lon Huber, will also file direct testimony in this proceeding. Mr. Radigan's testimony will address the rate base and operating income issues associated with the case, and both Mr. Radigan and Mr. Huber will provide testimony on RUCO's proposed rate design.

II. SUMMARY OF TESTIMONY AND RECOMMENDATIONS

Q. Briefly summarize how your cost of capital testimony is organized.

A. My cost of capital testimony is organized into twelve (12) different sections as identified in my "Table of Contents." In summary, I have derived cost of equity estimates obtained from both the Discounted Cash Flow ("DCF") model and the Capital Asset Pricing Model ("CAPM"). The DCF and CAPM are market-based cost of equity estimation models, and both have consistently been employed by RUCO and ACC Staff in prior rate proceedings. Additionally, the DCF and CAPM are methodologies which the ACC has traditionally given the most weight when establishing authorized rates of return for utilities operating within its Arizona jurisdiction. In addition to the DCF and CAPM models, I have also prepared a Comparable Earnings ("CE") analysis. For purposes of RUCO's recommended cost of equity in this proceeding, I have assigned a 40 percent weight to the cost of equity results obtained from the DCF and CE models, and a 20 percent weight to the cost of equity results obtained from the CAPM. The Company's witness, Dr. Bente Villadsen, obtains

1 cost of equity estimates from (i) two versions of the CAPM (i.e., the traditional CAPM and
2 the empirical CAPM); (ii) two versions of the DCF model (i.e., the constant growth DCF
3 model and the multi-stage DCF model); and (iii) one version of the Risk Premium model.
4 From each of these models, Dr. Villadsen obtains cost of equity estimates for both a 28-
5 company electric sample and 10-company nuclear subsample proxy group. My testimony
6 will conclude with a discussion of Dr. Villadsen's cost of equity estimation methodology,
7 and I will demonstrate that her analyses significantly over-states the Company's actual
8 cost of equity.

9
10 **Q. Please explain the rationale for RUCO assigning a weighting of 40 percent to the**
11 **cost of equity estimation results obtained from both its constant growth DCF and**
12 **CE models and a 20 percent weighting to the cost of equity estimates obtained from**
13 **the CAPM.**

14 **A.** As noted in testimony filed by Staff cost of capital witness, Mr. David Parcell, in the recent
15 Arizona Water Company ("AWC") rate docket,¹ cost of equity estimates derived from the
16 CAPM are lower than estimates obtained from the DCF and CE models for two reasons:
17 (i) risk premiums are currently lower than they have been over the past several years, and
18 (ii) yields on U.S. Treasury bonds (i.e., the risk-free rate) have also been lower in recent
19 years. Although Mr. Parcell elected not to incorporate estimates derived from the CAPM
20 into his analysis for purposes of his recommended cost of equity, he nevertheless
21 maintains that results obtained from the CAPM should be considered as a factor in
22 determining the cost of equity. RUCO agrees with this assessment. Therefore, rather

23
24

¹ See Docket No. W-01445A-15-0277, Direct Testimony of David C. Parcell, dated March 11, 2016, pp. 30-31.

1 than relying upon the arithmetic mean cost of equity estimate derived from its DCF, CE
2 and CAPM models as it has traditionally done, RUCO has elected to assign a 40 percent
3 weight to the results obtained from both its DCF and CE models, and a 20 percent weight
4 to the cost of equity results from the CAPM. RUCO believes this modification to its cost
5 of equity methodology to be both reasonable and equitable, as it gives recognition to cost
6 of equity estimates derived from the CAPM while providing for an incremental increase to
7 RUCO's overall recommended cost of equity estimate.

8
9 **Q. Please summarize the cost of capital recommendations to be addressed in your**
10 **testimony.**

11 **A.** Based upon the results of my analysis, I make the following recommendations:

12 I recommend that the Commission adopt a 7.53 percent overall rate of return for the
13 Company, based upon (i) a capital structure consisting of 44.20 percent long-term debt,
14 and common equity of 55.80 percent, (ii) an embedded 5.13 percent cost of long-term
15 debt, and (iii) a cost of common equity of 9.42 percent. The components included in my
16 cost of capital calculation are as follows:²

	<u>Weight</u>	<u>Cost</u>	<u>Weighted Cost</u>
Long-Term Debt	44.20 %	5.13 %	2.27 %
Common Equity	55.80 %	9.42 %	<u>5.26 %</u>
Overall Rate of Return			<u>7.53 %</u>

17
18
19
20 The cost of equity estimates included in my calculations are derived from the following
21 three cost of equity models, with the results obtained from the DCF and CE models
22
23

24

² See JAC Schedule 1.

assigned a weight of 40 percent, and the results obtained from the CAPM assigned a weight of 20 percent:³

	<u>Cost Estimate</u>	<u>Weight Factor</u>	<u>Weighted Average Cost Estimate</u>
Discounted Cash Flow	8.85 %	40 %	3.54 %
Capital Asset Pricing Model	7.28 %	20 %	1.46 %
Comparable Earnings	<u>11.06 %</u>	40 %	<u>4.42 %</u>
Average Cost of Equity	<u>9.06 %</u>		
Weighted Average Cost of Equity			<u>9.42 %</u>

III. ECONOMIC PRINCIPLES APPLICABLE TO ARIZONA

Q. What are the basic economic principles which apply in the determination of a fair rate of return for regulated public utilities in Arizona?

A. For regulated public utilities in Arizona, rates are established in a manner designed to allow for recovery of the utility's costs, including capital costs. This is traditionally referred to as "cost of service" ratemaking. Rates are established using the "rate base – rate of return" concept, wherein utilities are allowed to recover specific operating expenses, taxes and depreciation, and granted an opportunity to earn a fair value rate of return on the assets utilized (i.e., fair value rate base) in providing service to ratepayers. Rate base is derived from the asset side of the utility's balance sheet, while rate of return is developed from the liability/stockholders' equity side of the balance sheet. The revenue impact of the cost of capital in rates is determined by multiplying rate base by rate of return. In the instant docket, RUCO is recommending an overall rate of return for APS of 7.53 percent.

³ See JAC Schedule 2.

1 **Q. Is APS proposing that its original cost rate base also be used as its fair value rate**
2 **base?**

3 A. No. The Company proposes that the average of its OCRB and RCND rate bases be used
4 as its fair value rate base (FVRB).
5

6 **Q. What is the meaning of a “fair rate of return” when analyzing a rate case**
7 **application?**

8 A. From an economic standpoint, a “fair rate of return” is one which allows an efficient and
9 economically well managed utility the ability to maintain its financial integrity, attract
10 capital, and establish comparable returns for similar risk investments. These concepts
11 are derived from economic and financial theory and are generally implemented using
12 financial models and economic concepts. From a technical perspective, a “fair rate of
13 return” is an ex post (i.e., after the fact) earned return on an asset base. Conversely, the
14 cost of capital is an ex ante (i.e., before the fact) expected, or required, return on a capital
15 base. In regulatory proceedings, the two terms are often used interchangeably.
16

17 **Q. As regulated entities granted natural monopoly status, are public utilities**
18 **guaranteed to earn their authorized rate of return?**

19 A. No. Public utilities are afforded an opportunity to earn their authorized rate of return; there
20 is no guarantee that they will actually earn the rate of return authorized in a rate case.
21 Many factors are involved in determining a rate of return. However, investments in new
22 plant assets made subsequent to a rate case and/or increases to operating expenses
23 between rate cases can have a negative impact on a utility's realized rate of return.
24 Conversely, an increase in revenues and/or a decrease in operating expenses can have

1 a positive impact on the earned rate of return. In the former scenario, a public utility will
2 generally file for a rate increase. In the latter scenario, should a public utility earn a rate
3 of return in excess of that approved by a utility commission, then the commission may
4 instruct the utility to file a rate application in order that new rates be established to provide
5 rate relief to ratepayers.

6
7 **IV. GENERAL ECONOMIC CONDITIONS**

8 **Q. Why are economic and financial conditions important in the determination of the**
9 **cost of capital for a regulated public utility such as APS?**

10 A. Economic and financial conditions are important because the cost of capital, both fixed-
11 cost debt as well as common equity, is largely determined by current and future economic
12 and financial conditions. At any given time, the cost of capital is influenced by each of the
13 following: (i) the level of economic activity (i.e., economic growth); (ii) the stage of the
14 business cycle; (iii) the rate of inflation; and (iv) expectations of future economic
15 conditions. That current and future economic and financial conditions largely determine
16 the cost of equity, consistent with the Court's ruling in the *Bluefield* decision, which held
17 that

18 "[a] rate of return may be reasonable at one time, and become too high
19 or too low by changes affecting opportunities for investment, the money
market, and business conditions generally." Bluefield, 262 U.S. at 679.⁴

20 Measures of general economic indicators influencing the cost of capital are presented in
21 Schedule JAC-6 (Pages 1-7).

22
23
24 ⁴ *Bluefield Water Works and Improvement Company v. Public Service Commission of the State of West Virginia*
(262 U.S. 679), as cited in Parcell, David C., *The Cost of Capital: A Practitioner's Guide*, prepared for the
Society of Utility and Regulatory Financial Analysts (SURFA): 2010 Edition (p.26).

1 **Q. Briefly describe the recent trends in economic conditions and their impact on**
2 **capital costs over the past thirty years?**

3 A. From the early 1980's through the end of 2007, the United States economy experienced
4 an extended period of relative stability; one characterized by longer economic expansions,
5 periodic short contractions, low and declining inflation, and declining interest rates and
6 other capital costs. In 2008 and 2009, however, the economy experienced a significant
7 decline as a result of the sub-prime mortgage lending crisis, with the negative impact
8 affecting financial and capital markets both in the U.S. and internationally. This economic
9 decline has been described as the worst financial crisis since the Great Depression, and
10 is often referred to as, the "Great Recession." As a consequence, central banks in the
11 U.S. (i.e., Federal Reserve Bank, or "Fed") and other foreign countries initiated
12 accommodative monetary policies designed to stimulate economic growth and reduce
13 unemployment in an effort to recover from this worldwide recession.
14

15 **Q. Please describe how the economic and financial indicators were examined and how**
16 **they relate generally to the cost of capital.**

17 A. Schedule JAC-6 (Pages 1 and 2) identifies relevant economic data such as Real Gross
18 Domestic Product ("GDP") Growth, Industrial Production Growth, Unemployment,
19 Consumer Price Index ("CPI"), and Producer Price Index. As can be seen, 2007 marked
20 the sixth year of economic expansion, but beginning in 2008 the economy entered into a
21 significant decline, as indicated by negative real GDP and industrial production growth as
22 well as an increase in the unemployment rate. The recession bottomed out in June 2009,
23 and while the economy has expanded since that time it has done so at the slowest pace
24

1 of any recovery since World War II.⁵ Fortunately, the national unemployment rate has
2 been cut in half from a high of 10.0 percent in the fourth quarter of 2009 to 4.9 percent in
3 the third quarter of 2016. However, the Producer Price Index has remained negative in
4 each of the last two years, while in 2015 industrial production growth fell to its lowest level
5 since 2003, and has remained negative through the first three quarters of 2016. It should
6 be noted that at the State level, Arizona's unemployment rate -- 5.9 percent in the third
7 quarter of 2016 -- continues to lag that of the nation.⁶

8
9 Since 2008, inflation as measured by the CPI has been 3.0 percent or lower, and in each
10 of the last two years has remained below 1.0 percent; the annual inflation rate being 0.8
11 percent in 2014 and 0.7 percent in 2015. The annual rate of inflation has generally been
12 declining over the past several business cycles and continues to do so as evidenced by
13 the low annual inflation rates of the last four years, 2012-2015. Through the first three
14 quarters of 2016, inflation continues to be low with the average rate being 1.1 percent.

15
16 **Q. Is inflation expected to remain at relatively low levels over the next decade?**

17 **A.** Yes. As shown in Exhibit JAC-A, the Federal Reserve Bank of Cleveland estimates
18 expected inflation to average 1.93 percent over the next 10-years,⁷ a figure below that of
19 the Fed's 2.0 percent targeted rate of inflation.

20
21 ⁵ Long, Heather, and Luhby, Tami, "Yes, This is the Slowest U.S. Recovery since WWII," CNNMoney.com
22 (October 5, 2016). <http://money.cnn.com/2016/10/05/news/economy/us-recovery-slowest-since-wwii/>

23 ⁶ United States Department of Labor, Bureau of Labor Statistics, Arizona Unemployment Rate
24 <http://www.bls.gov/eag/eag.az.htm>

⁷ Federal Reserve Board of Cleveland, "Inflation Expectations," (News Release dated November 17, 2016).
<https://www.clevelandfed.org/our-research/indicators-and-data/inflation-expectations.aspx>

Q. How does this 10-year (i.e., 2016-2025) projected 1.75 percent annual rate of inflation compare to 10-year historical average annual rates of inflation over the last 40-year period (i.e., 1976-2015)?

A. Based on the annual rates of inflation as presented in Schedule JAC-6 (Page 1), the average 10-year inflation rate,⁸ measured over four different 10-year periods going back to 1976, are as follows:

Historical CPI inflation (1976-1985)	7.05 %
Historical CPI inflation (1986-1995)	3.45 %
Historical CPI inflation (1996-2005)	2.53 %
Historical CPI inflation (2006-2015)	1.86 %
Projected CPI inflation (2016-2025)	1.75 %

As can be seen, historical average annual inflation has fallen in each of the last four decades, and this trend is expected to continue as evidenced by projected average annual inflation during the 10-year period, 2016-2025, being 11 basis points lower than that of the prior 10-year period, 2006-2015 ($1.86\% - 1.75\% = 0.11\%$).

Q. Holding all other factors constant, is a projected average annual inflation rate of 1.75 percent over the next 10-year period suggestive that the current low interest rate environment will continue into the future?

A. Yes, it is.

The inflation expectations model employed by the Cleveland Fed uses Treasury yields, inflation data, inflation swaps, and survey-based measures of inflation expectations to calculate the expected inflation rate (CPI) over the next 30 years. The Cleveland Fed updates its 10-year expected inflation estimate on a monthly basis.

⁸ The historical annual inflation rates presented are computed as an arithmetic mean (i.e., simple average) over each 10-year period.

1 **Q. Since the election of Donald Trump as President, the bond market has experienced**
2 **a sharp sell-off, with the yield on the benchmark 10-year Treasury Note rising by 51**
3 **basis points (from 1.83 percent to 2.34 percent), while the yield on the 30-year**
4 **Treasury Bond has risen by 41 basis points (from 2.60 percent to 3.01 percent) over**
5 **the 8-day trading period, November 7-18, 2016. What caused this sharp rise in yield,**
6 **and is it an indication that inflation expectations have changed?**

7 A. The sell-off in the bond markets is attributable to the pledge made by President-elect
8 Trump to initiate a fiscal stimulus plan to rebuild the nation's infrastructure,⁹ and yes, it is
9 suggestive that inflation expectations have changed, as bond investors are concerned
10 that such infrastructure spending "will fuel growth and spur inflation."¹⁰ It should be noted,
11 however, that President-elect Trump won't take office until January 2017, and the details
12 of his administration's fiscal stimulus spending programs have yet to be worked out.

13
14 **Q. Are the Trump administration's planned infrastructure spending programs**
15 **expected to increase growth within the U.S. economy?**

16 A. According to Mr. James Bullard, president of the Federal Reserve Bank of St. Louis,
17 "there's a chance the U.S. economy could get a medium-term boost" from President-elect
18 Trump's planned infrastructure spending and tax reforms. However, Mr. Bullard believes
19 that it is "still too soon to say how the economy may be affected by the election and he
20 hasn't changed his near-term outlook for growth or monetary policy." Bullard anticipates
21

22
23 ⁹ Wallace, Karen, "How Trump has Changed Inflation Expectations," *Morningstar.com* (November 16, 2016).
<http://news.morningstar.com/articlenet/article.aspx?id=780914>

24 ¹⁰ Van der Walt, Eddie, "Sell-off in Bonds, Emerging-Market Assets Deepen as Dollar Gains," *Bloomberg.com*
(November 13, 2016). <http://www.bloomberg.com/news/articles/2016-11-13/asian-futures-outside-japan-tip-stock-losses-as-quake-hits-kiwi>

1 that a "single policy-rate increase" (i.e., a ¼ percent hike in the Fed funds rate) in
2 December 2016 will be sufficient "to move monetary policy to a neutral setting," and is on
3 record as advocating that the Fed then "keep them on hold for an extended period of
4 time."¹¹

5
6 **Q. Given the above noted rise in yield on the 10-year Treasury Note, as of the close of**
7 **market trading on Friday, December 16, 2016, is there any way of knowing what**
8 **investors currently expect average inflation to be over the next 10-years?**

9 A. Yes. The 10-year breakeven inflation rate represents a current measure of what investors
10 expect average inflation to be over the next 10-year period, and is calculated as the
11 difference between the current nominal yield on the 10-year Treasury Note (2.60 percent)
12 and the current rate on the 10-Year Treasury Inflation Protected Security, or TIPS, (0.74
13 percent). Thus, as of the close of market trading on December 16, 2016, the current 10-
14 year breakeven inflation rate is 1.86 percent ($2.60\% - 0.74\% = 1.86\%$).¹²

15
16 **Q. What has been the trend in interest rates over the forty-year period, 1975-2015?**

17 A. As shown in Schedule JAC-6 (Pages 3 – 4), interest rates rose sharply to record levels
18 during the period, 1975-1981, when inflation was high and generally rising. Interest rates
19 declined substantially, as did inflation, during the remainder of the 1980s and throughout
20 the 1990s. Interest rates declined even further during the period, 2000-2005, and after
21

22
23 ¹¹ Ward, Jim and Meakin, Lucy, "Fed's Bullard Sees Medium-Term Boost from Trump Spending," *Bloomberg.com*
(November 16, 2016). <https://www.bloomberg.com/news/articles/2016-11-16/fed-s-bullard-sees-medium-term-boost-from-trump-economic-policy>

24 ¹² The 10-year nominal rate and the 10-year TIPS rate are available from the U.S. Department of the Treasury.
<https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/default.aspx>

1 trending slightly upward in years 2006-2008, have since continued on a downward path
2 reaching levels in years 2009-2016 not previously seen since the early 1960s. In 2008,
3 the Federal Reserve (the "Fed") initiated an accommodative monetary policy by lowering
4 the federal funds ("Fed Funds") rate (the rate the Fed charges banks for overnight
5 transfers of funds), and in an effort to promote increased lending and liquidity, eventually
6 initiated a policy of quantitative easing, an unconventional monetary policy used when
7 short-term interest rates are at or approaching zero. As a consequence, in years 2012-
8 2016, both U.S. and corporate bond yields declined to their lowest levels in more than 40
9 years, with the yield on the benchmark 10-year Treasury Note falling to an all-time low
10 earlier this year.¹³

11
12 **Q. Is the decline in long-term interest rates which has taken place since the mid-1980s**
13 **something which the financial markets and professional forecasters saw coming**
14 **and accurately predicted?**

15 A. No, it is not. As reported in a recent study prepared by the Council of Economic
16 Advisors,¹⁴ "forecasters largely missed the secular decline of the last three decades"
17 because "past forecasts of long-term nominal interest rates have tended to err on the side
18 of mean reversion."¹⁵ (emphasis added) As evidence, the authors of the study prepared
19 a graphic presentation (10-Year Treasury Rates and Historical Economist Forecasts)
20 showing that forecasts made by a group of more than 50 private-sector economists of the
21

22
23 ¹³ On July 8, 2016, the 10-year Treasury Note traded at an all-time low of 1.361 percent.
<http://www.wsj.com/articles/government-bond-yields-in-u-s-europe-hit-historic-lows-1467731411>

24 ¹⁴ Executive Office of the President, Council of Economic Advisors, "Long-Term Interest Rates: A Survey," (July 2015). https://www.whitehouse.gov/sites/default/files/docs/interest_rate_report_final.pdf

¹⁵ *Ibid.*, p. 12.

1 benchmark 10-year Treasury rate, as reported by Blue Chip Economic Indicators ("Blue
2 Chip"), had systematically been overstated. This graphic presentation is provided as
3 RUCO Exhibit JAC-B. As shown, Blue Chip forecasts have consistently exceeded the
4 actual path (shown in blue) of nominal 10-year Treasury rates since 1995, and supports
5 a conclusion that forecasters mistakenly believed the yield on the 10-year Treasury Note
6 would—during the period(s) under study—revert back to a perceived historical mean. In
7 the study, the authors further note the following:

8 "Although economists' forecasts steadily declined after 1995, their pace
9 of decline has lagged well behind the realized drop-off in interest rates.
10 Indeed, since 1996, long-range private sector forecasts have exhibited
11 a root mean square error of 2.7 percentage points relative to the
12 nominal Treasury rate realized 10 years later."¹⁶

12 **Q. What conclusions do the authors of the study to which you cite above draw**
13 **regarding the decline in long-term interest rates?**

14 **A.** As noted in the Executive Summary of the report, the authors state the following:

15 This report surveys the recent thinking on the many drivers of long-term interest
16 rates in recent decades and going forward. It concludes:

- 17 • **The decline in long-term interest rates over the past thirty years was real,**
18 **global, and unexpected.** While lower inflation explains some of the decline in
19 nominal interest rates, the downtrend is evident even when adjusting nominal
20 interest rates for the rate of inflation. The decline has also been evident across a
21 wide range of countries, reflecting the increasing integration of the global
22 economy. Financial markets and professional forecasters alike consistently failed
23 to predict the secular shift, focusing too much on cyclical factors and missing the
24 long-term trend.
- **The decline is consistent with several theoretical frameworks economists**
have used to analyze interest rates. The interest rate settles at the level that

23 ¹⁶ *Ibid.*, p. 10. In a footnote, the authors describe the "root mean square error" as follows: "The root mean square
24 error is a commonly used measure of the deviation between predicted and actual values. The difference between
the two values is squared and then summed over time. The square root of that number is typically reported as a
summary statistic, with large values indicating large prediction errors."

equates the supply of saving with the demand for investment, and innumerable factors affect both sides of the equation. Many frameworks suggest that long-term interest rates are closely related to productivity growth. Other factors such as the rate of population growth and technological advance, as well as aggregate demand and the stance of fiscal and monetary policy, also play a role.

- **A number of factors, both transitory and longer-lived, have contributed to the decline—with many of these factors suggesting that long-run equilibrium interest rates have fallen.** Transitory factors include global fiscal and monetary policies, shifts in the term premium and inflation risk, and post-crisis private-sector deleveraging. More persistent factors include lower potential output and productivity growth, shifting demographics, and the global “saving glut.”

Ultimately, interest rates reflect underlying macroeconomic conditions; there is no “optimal” long-term rate of interest. Rather, policy should support long-run growth, maintain price stability, and support a stable financial system.¹⁷ (emphasis added)

Q. Has the secular decline in long-term interest rates which has taken place over the last 30 years proven beneficial to equity investors in the United States?

A. Yes, it has. In a recent report published by McKinsey & Company,¹⁸ the 30-year period, 1985-2014, was characterized as the “golden era for investment returns,” as real (i.e., inflation adjusted) total returns on equities averaged 7.9 percent in the United States over this period, a figure 140 basis points higher than the 6.5 percent 100 year average, and 220 basis points higher than the 5.7 percent 50 year average (emphasis added).¹⁹ As noted in the report, the underpinnings of these above average equity returns were made possible by the confluence of the following four exceptional factors:

- A sharp decline in inflation from the unusually high levels of the late 1970s and early 1980s;
- The resultant decline in nominal long-term interest rates,
- Strong global GDP growth, lifted by positive demographics, productivity gains, and rapid growth in China; and

¹⁷ *Ibid.*, Executive Summary, p. 4.

¹⁸ McKinsey Global Institute, “Diminishing Returns: Why Investors May Need to Lower their Expectations,” May 2016. www.mckinsey.com/industries/.../why-investors-may-need-to-lower-their-sights

¹⁹ *Ibid.*, p. 2. As noted in the report, over this same 30-year period Western European investors also achieved real total returns on equity of 7.9 percent, a figure 300 basis points higher than the 4.9 percent 100 year average.

(iv) Even stronger corporate profit growth, reflecting revenue growth from new markets, declining corporate taxes, and advances in automation and global supply chains that contained costs.²⁰

Q. Over this same 1985-2014 time period, did bond investors also achieve higher real returns on fixed-income investments?

A. Yes. As measured by returns on 10-year U.S. Treasury Bonds, fixed income investors achieved total real returns of 5.0 percent over the 30-year period, 1985-2014, a figure 330 basis points higher than the 1.7 percent 100 year average, and 250 basis points higher than the 2.5 percent 50 year average.²¹

Q. Going forward, does the McKinsey report anticipate this 'golden era' for investment returns to continue?

A. No, it does not. In fact, the purpose of the report is to place investors on notice that on a going-forward basis they should begin to lower their expectations regarding investment returns on both equity and debt securities, as "[t]his era is coming to an end."²² Based upon its analysis, the McKinsey report lays out two scenarios as to what investors might expect over the 20-year period, 2016-2035; Scenario 1 being a slow growth scenario, and Scenario 2 being a growth recovery scenario. In the report, McKinsey points out that in both its *slow growth* and *growth recovery* scenarios, "U.S. and Western European equity and bond returns fail to match those of the past 30 years and could be lower than the 50-

²⁰ *Ibid.*, pp. 10-16.

²¹ *Ibid.*, pp. 2-3. As further noted in the report (p. 11), of this 5.0 percent real total return for U.S. bond investors capital gains accounted for fully 1.9 percent (190 basis points) due to nominal interest rates falling from 9 percent to 2 percent.

²² *Ibid.*, p. 3.

and 100-year averages.”²³ Furthermore, under Scenario 1 “slow growth could reduce total U.S. equity returns by more than 250 basis points and bond returns²⁴ by 400 basis points or more below the 1985-2014 period (emphasis added);”²⁵ under Scenario 2, “in a growth-recovery scenario, U.S. equity and bond returns would be 140-240 and 300-400 basis points, respectively, below the average of the 1985-2014 period.”²⁶ As presented in the McKinsey report, the following is a summary of both historical real total investment returns on equities and 10-year U.S. Treasury Bonds over the 100-year period, 1915-2014, the 50-year period, 1965-2014, and the 30-year period, 1985-2014, as contrasted with the expected investment returns over the 20-year period, 2016-2035, under each of the above noted scenarios:²⁷

Historical and Projected Investment Returns on U.S. Equities and 10-Year Treasury Bonds

<u>Investment</u>	<u>Historical Returns</u>			<u>Prospective Returns (2016-2035)</u>	
	<u>1915-2014</u>	<u>1965-2014</u>	<u>1985-2014</u>	<u>Slow Growth</u>	<u>Growth Recovery</u>
U.S. Equities	6.5%	5.7%	7.9%	4.0-5.0%	5.5-6.5%
10-Year Treasuries	1.7%	2.5%	5.0%	0-1.0%	1.0-2.0%

²³ *Ibid.*, p. 21.

²⁴ For purposes of its analysis, investment returns on bonds are measured by the return on 10-year U.S. Treasury Bonds.

²⁵ *Ibid.*

²⁶ *Ibid.*, p. 22.

²⁷ *Ibid.*, p. 2, Exhibit 1.

1 **Q. Briefly discuss the reasons cited in the McKinsey report for the expected decline**
2 **in investment returns on equity and debt securities over the 20-year period, 2016-**
3 **2035.**

4 A. As noted earlier, the McKinsey report attributed the on-set of the so-called 'golden era' of
5 investment returns to the confluence of four exceptional factors. The authors state that
6 the fundamental economic and business conditions which contributed to above-average
7 returns over the past 30 years "have run out of steam, and in some cases are in the
8 process of reversing."²⁸ Specifically, the report cites to the following three contributing
9 factors as reasons for the expected decline in investment returns going forward:

- 10 • the steep decline in interest rates over the past 30 years is unlikely to be repeated
- 11 • expected slower GDP growth, due to (i) an aging population and (ii) declining
productivity growth, and
- 12 • lower profit margins for businesses facing greater competition from (i) emerging
markets, (ii) technology and tech-enabled firms, and (iii) small and medium-sized
enterprises.²⁹

13
14 **Q. For purposes of its analysis of the U.S. equity market, the findings of the McKinsey**
15 **report are based on aggregate returns of non-financial companies included in the**
16 **Standard & Poor's 500 ("S&P 500").³⁰ Are regulated public utilities included in the**
17 **S&P 500?**

18 A. Yes. Among the 500 companies currently included in the S&P 500, 28 are regulated
19 public utilities. Included among this number are Pinnacle West Capital Corporation
20 ("Pinnacle West"), the parent company of APS, as well as 16 other electric service
21
22

23 ²⁸ *Ibid.*, p. 17.

24 ²⁹ *Ibid.*, pp. 17-19.

³⁰ *Ibid.*, p. 5.

1 providers which the Company's cost of capital witness, Dr. Bente Villadsen, has included
2 in her proxy group of companies.³¹
3

4 **Q. In light of the above, is it reasonable to assume that on a going-forward basis equity**
5 **investment returns for regulated public utilities might also be expected to decline**
6 **over the 20-year period, 2016-2035?**

7 A. Yes, I believe that is a reasonable assumption. Furthermore, this would be true
8 irrespective of whether regulated public utilities were included in the S&P 500, as a broad
9 based decline in investment returns over the next 20-year period would bring about a
10 reduction in the opportunity cost of capital, or the expected return on alternative
11 investment opportunities.
12

13 **Q. On December 16, 2015, the Fed raised the federal funds rate ("fed funds rate") from**
14 **a level of 0 to ¼ percent to ¼ - ½ percent. In doing so, did the action taken by the**
15 **Fed signal a change in monetary policy by the U.S. central bank?**

16 A. No. While the increase to the fed funds rate marked the first time the Fed had increased
17 the rate it charged banks for overnight transfers of funds since mid-2006,³² in a press
18 release issued on December 16, 2015, the Fed made the following statement: "The stance
19
20
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22 ³¹ These 16 other regulated electric service providers include: Alliant Energy Corporation, Ameren
23 Corporation, American Electric Power, CenterPoint Energy, CMS Energy, Consolidated Edison, Dominion
Resources, DTE Energy Company, Edison International, Entergy Corporation, NextEra Energy, PG&E
Corporation, Public Service Enterprise Inc., SCANA Corporation, Sempra Energy, and Xcel Energy Inc.

24 https://en.wikipedia.org/wiki/List_of_S%26P_500_companies

³² The Fed last raised the fed funds rate on June 29, 2006.
<http://www.federalreserve.gov/monetarypolicy/openmarket.htm>

1 of monetary policy remains accommodative after this increase, thereby supporting further
2 improvement in labor market conditions and a return to 2 percent inflation."³³

3
4 **Q. After raising the fed funds rate in December 2015, was the Fed expected to continue**
5 **to take steps to raise the fed funds rate in 2016?**

6 A. Yes. In keeping with its plan to "normalize" interest rates, it was generally believed that
7 the Fed would raise the fed funds rate four more times by ¼ percent (25 basis points) in
8 2016, an annual increase of 1.0 percent (100 basis points).³⁴

9
10 **Q. While the Fed just did raise the fed funds rate by an additional ¼ percent on**
11 **Wednesday, December 14, 2016, do we know the reason(s) why the Fed held off**
12 **from following through on the planned rate increases referenced above?**

13 A. I believe the reasons can be found in statements made by the Chairwoman of the Federal
14 Reserve, Ms. Janet Yellen. When testifying before the Joint Congressional Economic
15 Committee ("Committee") in early December 2015 (i.e., prior to the hike in the fed funds
16 rate), Ms. Yellen downplayed the possibility of a recession in the U.S. economy but
17 specifically acknowledged the risk of a global economic recession, stating that a hike in
18 the fed funds rate would give the Fed "the flexibility to lower it if those risks cause the
19 economy to falter in the future."³⁵ However, when testifying before the Committee on
20 February 11, 2016, Ms. Yellen "conceded that there's a 'chance' of a downturn ahead,"

21
22 ³³ Federal Reserve Board, Federal Open Market Committee, *Press Release* (December 16, 2015).
<http://www.federalreserve.gov/newsevents/press/monetary/20151216a.htm>

23 ³⁴ Blue Chip Financial Forecasts (December 1, 2015), p.1.

24 ³⁵ Puzzanghera, Jim, "Downplaying Risk of Recession, Yellen Indicates an Interest Rate Hike is Coming this Month,"
Los Angeles Times (December 3, 2015). <http://www.latimes.com/business/la-fi-yellen-congress-20151203-story.html>

1 and even indicated that the Fed was “studying whether negative interest rates would help
2 should conditions worsen.”³⁶ In further testimony before the Committee, Ms. Yellen
3 acknowledged that Fed officials had been “caught off guard” by (i) the degree to which
4 “[m]arkets have been tumbling as oil prices plunge, with traders now pricing in the chance
5 that the Fed’s next move could be a rate cut rather than hike;” and (ii) the persistent
6 strength of the greenback, as the dollar movement is “not something we anticipated.”³⁷
7 (emphasis added)
8

9 **Q. Since testifying before Congress in February 2016, has Fed Chair Yellen made**
10 **additional public comments relating to the outlook for the U.S. economy and**
11 **monetary policy?**

12 A. Yes. In a speech delivered to the Economic Club of New York,³⁸ Ms. Yellen laid out the
13 view that the Federal Open Market Committee (“FOMC”) continues to expect

- 14 1) Moderate economic growth over the medium term; and
15 2) Further labor market improvement and a return of inflation to the
Fed’s 2.0 percent objective over the next two or three years.

16 However, Ms. Yellen frequently qualified her remarks by acknowledging that “global
17 developments pose ongoing risks,” pointing out that “manufacturing and net exports
18 continue to be hard hit by slow global growth and the significant appreciation of the dollar
19 since 2014.” Furthermore, while it is her judgment that “inflation expectations are well
20 anchored,” Chairperson Yellen acknowledged that “the decline in some indicators has
21

22
23 ³⁶ Cox, Jeff, “Yellen on Negative Rates: ‘We Wouldn’t Take those off the Table,’” (February 11, 2016).
<http://www.cnbc.com/2016/02/11/fed-chair-yellen-theres-always-some-chance-of-recession.html>

24 ³⁷ *Ibid.*

³⁸ Yellen, Janet, “The Outlook, Uncertainty, and Monetary Policy,” a speech delivered to the Economic Club of New
York, March 29, 2016. <https://www.federalreserve.gov/newsevents/speech/yellen20160329a.htm>

1 heightened the risk that this judgment could be wrong,” and if so, a return to the Fed’s
2 desired 2 percent rate of inflation could take longer than expected and “require a more
3 accommodative stance of monetary policy.” As a consequence, Ms. Yellen stated that
4 only “gradual increases in the federal funds rate are likely to be warranted in coming
5 years.” (emphasis added)

6
7 **Q. From a monetary policy perspective, please explain why strength in the U.S. dollar**
8 **is a concern to the Fed.**

9 A. A strong dollar *vis-à-vis* other currencies places U.S. exports at a competitive
10 disadvantage in foreign markets as they become more expensive. For U.S. exporters,
11 this has the effect of reducing revenues and lowering profits. However, from a monetary
12 policy perspective “increases in the federal funds rate also result in a strengthening of the
13 U.S. dollar.”³⁹ (emphasis added) Consequently, should the Fed hike short-term interest
14 rates at a time when the dollar is already strong it places U.S. exporters at a further
15 competitive disadvantage and increases the prospect that the U.S. economy might slip
16 into recession.

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24 ³⁹ Tarver, Evan, “How the Fed Fund Rate Hikes Affect the U.S. Dollar,” Investopedia.com (October 12, 2015).
<http://www.investopedia.com/articles/investing/101215/how-fed-fund-rate-hikes-affect-us-dollar.asp>

1 **Q. Relative to other currencies, is the strength of the U.S. dollar currently high by**
2 **historical standards?**

3 A. Yes, it is. The ICE U.S. Dollar Index⁴⁰ measures the strength of the U.S. Dollar relative
4 to a basket of six other foreign currencies,⁴¹ and in market trading on Friday, November
5 18, 2016, the index "reached its highest level in more than 13 years."⁴²

6
7 **Q. Was the strength of the U.S. dollar seen as a concern prior to the time the Fed first**
8 **raised the fed funds rate in mid-December 2015?**

9 A. Yes. As noted by Blue Chip, "the Fed will begin normalizing rates at a time when most
10 other central banks remain extremely accommodative, thus risking further increases in
11 the foreign exchange value of an already strong U.S. dollar."⁴³ (emphasis added)

12
13 **Q. As noted earlier, the report issued by the Council of Economic Advisors found that**
14 **long-term interest rates are closely related to productivity growth. What is**
15 **productivity growth, and why is it important?**

16 A. Productivity growth – more output for the same volume of inputs – is economic growth
17 which cannot be explained by changes in the other key factor inputs, capital and labor.
18 Rising output per hour is seen as the most common definition of improving productivity,
19 and a benchmark for how efficiently the economy is performing. Gains in productivity

21
22 ⁴⁰ The ICE U.S. Dollar Index (USDX) futures contract is a leading benchmark for the international value of the
US dollar and the world's most widely-recognized traded currency index. ICE is short for Intercontinental
Exchange. <https://www.theice.com/products/194/US-Dollar-Index-Futures>

23 ⁴¹ The six foreign currencies are: the Euro, Japanese yen, British pound, Canadian dollar, Swedish krona and
Swiss franc.

24 ⁴² Dulaney, Chelsey, and Eisen, Ben, "Dollar's Rapid Gain Triggers Angst in Emerging Markets," *WSJ.com*,
November 18, 2016. <http://www.wsj.com/articles/strong-dollar-could-be-rallys-weak-link-1479474002>

⁴³ Blue Chip Financial Forecasts (December 1, 2015), p.1.

1 typically stem from innovation, new ideas and technological progress.⁴⁴ As to its
2 importance, Warren Buffet has described productivity growth as, "the 'secret sauce' of
3 America's remarkable gains in living standards since the nation's founding in 1776," and
4 the link to our nation's "prosperity,"⁴⁵ while economist Paul Krugman is noted for having
5 observed that, "productivity isn't everything, but in the long run it is almost everything."⁴⁶

6
7 **Q. As a measure of overall economic health, is productivity growth in the U.S. rising,**
8 **or falling?**

9 A. Productivity is a key ingredient in determining future growth in wages, prices and overall
10 economic output, and at present the U.S. economy is experiencing the "longest slide in
11 worker productivity since the late 1970s," and Fed Chair Yellen recently characterized
12 "the outlook for productivity growth as a 'key uncertainty for the U.S. economy.'"⁴⁷
13 (emphasis added) Over time, it is believed that "persistently weak productivity would
14 weigh on American living standards," and be "a force that could prompt Federal Reserve
15 officials to keep interest rates low for years to come."⁴⁸

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20 ⁴⁴ Lambert, John, "Productivity is Everything," GAM.com [https://www.gam.com/en/insights-](https://www.gam.com/en/insights-content/2016/macroeconomics/productivity-is-everything/)
21 [content/2016/macroeconomics/productivity-is-everything/](https://www.gam.com/en/insights-content/2016/macroeconomics/productivity-is-everything/)

22 ⁴⁵ Buffet, Warren, "Letter to the Shareholders of Berkshire Hathaway, Inc.," Berkshire Hathaway 2015 Annual
23 Report, p. 21. <http://www.berkshirehathaway.com/letters/2015ltr.pdf>

24 ⁴⁶ Krugman, Paul, The Age of Diminishing Expectations, 1994, as quoted in Lambert, John, "Productivity is
Everything," GAM.com [https://www.gam.com/en/insights-content/2016/macroeconomics/productivity-is-](https://www.gam.com/en/insights-content/2016/macroeconomics/productivity-is-everything/)
[everything/](https://www.gam.com/en/insights-content/2016/macroeconomics/productivity-is-everything/)

⁴⁷ Leubsdorf, Ben, "Productivity Slump Threatens Economy's Long-Term Growth," WSJ.com, August 9, 2016.
<http://www.wsj.com/articles/u-s-productivity-dropped-at-0-5-pace-in-the-second-quarter-1470746092>

⁴⁸ *Ibid.*

1 **Q. Many have used the expression, "new normal," when describing the current state**
2 **of the economy. Given the current downward trend in productivity growth, what is**
3 **the estimated 'new normal' for real (i.e., inflation adjusted) GDP growth going**
4 **forward?**

5 A. In a newly issued *Economic Letter* published by the Federal Reserve Bank of San
6 Francisco, the new normal pace of real GDP growth is estimated to fall in the range of
7 1½ to 1¾ percent.⁴⁹ As noted in the *Letter*, this estimate is based on "trends in
8 demographics, education, and productivity," and assumes that

- 9 (i) the aging and retirement of the baby boom generation is expected to hold down
employment growth relative to population growth,
- 10 (ii) educational attainment has plateaued, reducing the contribution of labor quality to
productivity growth, and
- 11 (iii) the slower forecast for overall GDP growth reflects the pace of productivity growth
as measured over the period, 1973-2015.

12
13 As presented in the *Economic Letter*,⁵⁰ productivity growth grew at an average rate of
14 approximately 2.75 percent during the period, 1948-1973, fell to a level of approximately
15 1.25 percent during the period, 1973-1995, rose to a level of approximately 2.50 percent
16 during the period, 1995-2004, and has since fallen to an average level of approximately
17 1.00 percent during the period, 2004-2015. However, over the most recent 5-year period,
18 2010-2015, average productivity growth has fallen to a level of approximately 0.3 percent.

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23 ⁴⁹ Fernald, John, "What is the New Normal for U.S. Growth?," *Economic Letter* 2016-30, Federal Reserve Bank of
San Francisco (October 11, 2016), p.1. [http://www.frbsf.org/economic-research/publications/economic-](http://www.frbsf.org/economic-research/publications/economic-letter/2016/october/new-normal-for-gdp-growth/)
24 [letter/2016/october/new-normal-for-gdp-growth/](http://www.frbsf.org/economic-research/publications/economic-letter/2016/october/new-normal-for-gdp-growth/)

⁵⁰ *Ibid.*, Figure 2: Variation in productivity growth by trend period (p. 2).

1 **Q. Among the factors taken into consideration by the author when estimating the new**
2 **normal for real GDP growth, which factor causes the greatest uncertainty?**

3 A. As noted by the author, the major source of uncertainty about the future is productivity
4 growth. While the author acknowledges that changes in trend productivity growth have
5 historically been "unpredictable and large," and that a new wave of "IT revolution from
6 machine learning and robots" might boost productivity growth, until such a development
7 occurs "the most likely outcome is a continuation of slow productivity growth."⁵¹

8
9 **Q. What conclusions does the author draw concerning real GDP growth going**
10 **forward?**

11 A. The author states that once the U.S. economy fully recovers from the Great Recession,
12 real GDP growth "is likely to be well below historical norms, plausibly in the range of 1½
13 to 1¾ percent per annum." The author further notes that this slower pace of growth will
14 lead to (i) slower growth in average wages and living standards for workers, (ii) relatively
15 modest growth in sales for businesses, and from a monetary policy perspective (iii) a low
16 'speed limit' for the economy. Citing to another recent *Economic Letter* published by the
17 Federal Reserve Bank of San Francisco,⁵² the author concludes by saying that this slower
18 pace of growth also suggests "a lower equilibrium or neutral rate of interest."⁵³ (emphasis
19 added)

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⁵¹ *Ibid.*, p. 4.

23 ⁵² Williams, John C., "Monetary Policy in a Low R-star World," *Economic Letter* 2016-23, Federal Reserve
24 Bank of San Francisco (August 15, 2016). <http://www.frbsf.org/economic-research/publications/economic-letter/2016/august/monetary-policy-and-low-r-star-natural-rate-of-interest/>

⁵³ *Ibid.*

1 **Q. As discussed in the *Economic Letter* cited to above, what is the equilibrium, or**
2 **neutral rate of interest?**

3 A. In the article, the equilibrium, or neutral rate of interest is referred to as the "natural real
4 rate of interest," "r*," or "r-star," and defined by the author as the "short-term real (inflation-
5 adjusted) rate that balances monetary policy so that it is neither accommodative nor
6 contractionary in terms of growth and inflation."⁵⁴

7
8 **Q. Is the natural real rate of interest (r-star), synonymous with (i.e., same thing as) the**
9 **fed funds rate?**

10 A. No, it is not. The fed funds rate is the rate the Fed charges banks for overnight transfers
11 of funds, while the natural real rate of interest is a conceptual interest rate which cannot
12 be observed but must instead be estimated. In fact, when making public statements
13 regarding monetary policy and the fed funds rate, Fed Chairwoman Janet Yellen often
14 cites to what she refers to as the "neutral rate" (i.e., r-star), contrasting its level to that of
15 the fed funds rate.⁵⁵

16
17 **Q. Has the natural real rate of interest (r-star), experienced a significant decline over**
18 **the last 25 years?**

19 A. Yes, as a variety of economic factors have "pushed natural interest rates very low."⁵⁶ As
20 noted by the author, in 1990 the inflation-adjusted natural rate of interest (r-star) was
21 estimated to be between 2½ to 3½ percent in the United States, Canada, the euro area,

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23 ⁵⁴ *Ibid.*, pp. 1-2.

⁵⁵ Coy, Peter, "The Search for the Elusive Natural Interest Rate," *Bloomberg.com*, (July 22, 2016).

24 <http://www.bloomberg.com/news/articles/2016-07-22/the-search-for-the-elusive-natural-interest-rate>

⁵⁶ Williams (2016), p. 2.

1 and the United Kingdom. On the eve of the global financial crisis, by 2007 these rates
2 had declined to between 2 and 2½ percent. By 2015, they had declined even further, with
3 the inflation-adjusted natural rate being “nearly zero for the United States, and below zero
4 for the euro area.”⁵⁷

5
6 **Q. What is the key takeaway from the trend in lower global natural real rates of interest
7 (r-star) which has taken place over the past quarter century?**

8 A. As noted by the author, the key takeaway from this global trend is that

9 “interest rates are going to stay lower than we’ve come to expect in the
10 past. This does not mean they will be zero, but when juxtaposed with
11 pre-recession normal short-term interest rates of, say, 4 to 4½%, it may
12 be jarring to see the underlying r-star guiding us towards a new normal
13 of 3 to 3½%—or even lower. Importantly, this future low level of interest
14 rates is not due to easy monetary policy; instead, it is the rate expected
15 to prevail when the economy is at full strength and the stance of
16 monetary policy is neutral.”⁵⁸ (emphasis added)

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23 **Q. At present, is it appropriate to think of the U.S. economy as being at, ‘full strength?’**

24 A. No, it is not. Furthermore, despite the actions taken by the Fed to hike the fed funds rate
by an additional ¼ percent on December 14, 2016, the stance of monetary policy remains
accommodative.⁵⁹

⁵⁷ *Ibid.*, p.2, and as presented in Figure 1: *Estimated inflation-adjusted natural rates of interest* (p. 2).

⁵⁸ *Ibid.*

⁵⁹ <https://www.federalreserve.gov/newsevents/press/monetary/20161214a.htm>

1 **Q. To your knowledge, is the natural real rate of interest (r-star) for the United States**
2 **higher, or lower, than the current fed funds target range of ¼ to ½ percent?**

3 A. As evidenced by statements made by Fed Chair Janet Yellen when testifying before the
4 Joint Economic Committee, United States Congress, on November 17, 2016, the natural
5 real rate of interest (r-star) is currently estimated to be slightly higher than the fed funds
6 rate. Specifically, Ms. Yellen noted that “[w]ith the federal funds rate currently only
7 somewhat below estimates of the neutral rate [i.e., r-star], the stance of monetary policy
8 is likely moderately accommodative, which is appropriate to foster further progress toward
9 the FOMC’s objectives.”⁶⁰ (emphasis added) In this regard, Ms. Yellen indicated that
10 “[t]he FOMC continues to expect the evolution of the economy will warrant only gradual
11 increases in the federal funds rate over time to achieve and maintain maximum
12 employment and price stability.”⁶¹ (emphasis added)

13
14 **Q. When testifying before the Congressional Joint Economic Committee, did Fed**
15 **Chair Yellen make additional references to the natural real rate of interest (r-star)?**

16 A. Yes, she did. Referring to the natural real rate of interest (r-star) as, “the neutral federal
17 funds rate,” Ms. Yellen characterized it as “neither expansionary nor contractionary” and
18 the rate which “keeps the economy on an even keel.”⁶² (emphasis added)

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23 ⁶⁰ Yellen, Janet L., “*The Economic Outlook*,” Testimony before the Joint Economic Committee, U.S.
Congress, Washington, DC (November 17, 2016).

<https://www.federalreserve.gov/newsevents/testimony/yellen20161117a.htm>

24 ⁶¹ *Ibid.*

⁶² *Ibid.*

1 **Q. The election of Donald Trump as President and the consequent sell-off which took**
2 **place in the bond markets due to concerns of higher inflation preceded the**
3 **appearance of Fed Chair Yellen before Congress on November 17, 2016. With**
4 **regard to the economic outlook, does Ms. Yellen anticipate a sudden rise in**
5 **inflation?**

6 A. No, she does not, as evidenced by the following statement: "With regard to the outlook, I
7 expect economic growth to continue at a moderate pace sufficient to generate some
8 further strengthening in labor market conditions and a return of inflation to the Committee's
9 2 percent objective over the next couple of years."⁶³ (emphasis added)

10
11 **Q. You point out that Fed Chairwoman Yellen and the FOMC continue to anticipate a**
12 **return of inflation to the Fed's 2.0 percent objective over the next two to three years.**
13 **Prior to the recent sell-off in the bond market, did the market agree with the Fed on**
14 **this point?**

15 A. No. As expressed by one market pundit earlier this year,
16
17 "[t]he market and the Federal Reserve have very different views on
18 where inflation will go from here. The Fed sees it moving pretty quickly
from today's lows back to the Fed's two percent target. The market, on
the other hand, doesn't see inflation rising near the Fed's goals anytime
in the next decade."⁶⁴

19 **Q. What trends do the economic indicators suggest for common share prices?**

20 A. As shown in Schedule JAC-6 (Pages 5 and 6), stock prices were stagnant during the high
21 inflation/high interest rate environment of the late 1970s and early 1980s. In 1983,
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24 ⁶³ *Ibid.*

⁶⁴ Matthews, Chris, "The Market Doesn't Believe Janet Yellen," *Fortune*, March 30, 2016.
<http://fortune.com/2016/03/30/janet-yellen-fed-interest-rates/>

1 however, equity prices began to rise steadily, particularly as measured by the Dow Jones
2 Industrial Average ("DJIA"), before peaking in 2007. With the onset of the Great
3 Recession in 2008, equity prices declined sharply from their highs of 2007, reaching a low
4 in the first quarter of 2009. Beginning in the third quarter of 2009, equity prices again
5 began to rise, eventually recovering the losses sustained as a consequence of the "crash"
6 in 2008 and, as evidenced by the performance of the DJIA, the S&P 500 Composite Index
7 ("S&P 500"), and the NASDAQ Composite Index ("NASDAQ"), went on to reach new all-
8 time highs in the fourth quarter of 2015. Following the action taken by the Fed to raise
9 the Fed Funds rate in December 2015, the equity markets experienced a sell-off, but all
10 three major stock indices have since risen to establish new highs in the third quarter of
11 2016. It should be noted that on the night of the election, the Dow Jones futures contracts
12 were down at one point by over 900 points on news that Donald Trump had been elected
13 President. At the market open the following day, most of those losses had been
14 recovered, and the equity markets finished higher not only on that day, but have since
15 continued to rise, with the DJIA breaking through 19,000 for the first time ever.⁶⁵

16
17 **Q. We are now in the seventh year of recovery from the Great Recession. Is the U.S.**
18 **economy at significant risk of falling back into recession?**

19 **A.** Yes, there is significant risk that the U.S. economy could fall into recession sometime
20 within the next four years, as periods of economic expansion have lasted, on average,

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24 ⁶⁵ Holm, Eric, "Dow Hits 19,000 for First Time," *WSJ.com* (November 22, 2016).
<http://blogs.wsj.com/moneybeat/2016/11/22/dow-hits-19000-for-first-time/>

only about five years going back to the end of World War II.⁶⁶ Recession is defined as two consecutive quarters of shrinking economic growth.

Q. In setting monetary policy, what is the Fed's stated long-term objective?

A. Consistent with its statutory mandate, when setting monetary policy the long-term objective of the Fed's Federal Open Market Committee ("FOMC") is two-fold: (i) maximum employment, and (ii) price stability (i.e., inflation of 2.0 percent).⁶⁷

Q. In the event the U.S. economy were to slip into recession and the unemployment rate were to rise, is it possible that the Fed might once again have to take steps to stimulate economic growth in order to achieve full employment?

A. Yes, in keeping with its statutory mandate to achieve full employment, the Fed might well have to do that.

Q. If inflation were to remain below two percent for the next decade, would it be difficult for the Fed to justify raising short-term rates over such an extended period of time?

A. Yes, because when setting monetary policy the Fed is 'data dependent,' and in the event inflation were to remain below the Fed's 2.0 percent targeted rate, justifying a raise in short-term interest rates would be made difficult.⁶⁸

⁶⁶ Isidore, Chris, "Will Donald Trump get Hit with a Recession?," *CNN Money On-line*, November 9, 2016. <http://money.cnn.com/2016/11/09/news/economy/president-elect-donald-trump-recession/>

⁶⁷ Federal Reserve Board, Federal Open Market Committee, *Press Release* (April 27, 2016). <http://www.federalreserve.gov/newsevents/press/monetary/20160427a.htm>

⁶⁸ Sharf, Samantha, "Even the Fed Can't Decide what 'Data Dependent' Really Means," *Forbes.com*, February 18, 2015. <http://www.forbes.com/sites/samanthasharf/2015/02/18/even-the-fed-doesnt-know-what-data-dependent-really-means/#1fe98f3de0b9>

1 **Q. Are there other reasons to expect that yields on long-term Treasury securities will**
2 **remain low?**

3 A. Yes, there are four reasons which have been identified.⁶⁹ First, U.S. Government backed
4 Treasury securities are viewed as "haven assets," and as such analysts expect there to
5 be a continued global flight-to-quality into U.S. Treasuries, particularly the 10-year note.
6 Second, following Fed Chairman Yellen's speech to the Economic Club of New York,
7 investors began to view the Fed as being more "dovish," as she stressed the need for a
8 cautious approach to raising short-term interest rates, citing the risks associated from a
9 slowdown in global growth. Third, yields on long-term Treasury securities are mostly
10 influenced by projections of growth and inflation within the U.S. economy, and not by
11 actions taken by the Fed to control the front-end of the yield curve. Lastly, analysts
12 anticipate that due to the low, and in some cases negative, yields on sovereign debt
13 issued in Europe and Japan, investor demand for U.S. Treasury securities will continue
14 to be strong, further keeping downward pressure on yields.

15
16 **Q. What is the current consensus opinion regarding how many times the Fed is**
17 **expected to raise short-term interest rates next year?**

18 A. Newly released economic projections indicate that the Fed is projected to increase the
19 fed funds rate three times in 2017, with each increase expected to be ¼ percent.⁷⁰
20
21

22 ⁶⁹ Ismailidou, Ellie, "Four Reasons Why Treasury Yields are Hurtling Lower," *MarketWatch* (April 6, 2016).
23 <http://www.marketwatch.com/story/4-reasons-why-treasury-yields-are-hurtling-lower-2016-04-06>

24 ⁷⁰ Tankersley, Jim, "Federal Reserve Raises Interest Rates for Second Time in a Decade," *WashingtonPost.com*
(December 14, 2016). https://www.washingtonpost.com/news/wonk/wp/2016/12/14/federal-reserve-expected-to-announce-higher-interest-rates-today/?utm_term=.1e2dc1a01102

1 **Q. Despite having just raised the fed funds rate by an additional ¼ percent, what do**
2 **Fed officials believe the current rate of inflation to be?**

3 A. Fed officials now judge the overall inflation rate to be 1.5 percent, up from 1.3 percent in
4 September, but still well below its 2.0 percent target. They judge core inflation, which
5 excludes volatile commodities such as gasoline prices, to be 1.7 percent.⁷¹

6
7 **Q. Do Fed officials anticipate a growth boost next year from economic policies to be**
8 **implemented by President-elect Donald Trump?**

9 A. No. In fact, Fed Chair Yellen indicated that she “does not see much need for a large,
10 deficit-financed boost from federal fiscal policy, either tax cuts or spending increases,”
11 and further states that, “at this point fiscal policy is not obviously needed to provide
12 stimulus to help us get back to full-employment.”⁷²

13 **Q. What conclusions can be drawn from the above discussion of economic and**
14 **financial conditions as they relate to the cost of capital?**

15 A. While the Fed has raised the fed funds rate for only the second time in over a decade,
16 and is projected to do so three additional times in 2017, it remains to be seen if this will
17 actually happen. As discussed previously in my direct testimony, long-term interest rates
18 have experienced a secular decline over the last 35 years, and inflation has fallen to levels
19 not seen since the early 1960s. Given this back drop, there is ample evidence to suggest
20 that on a going-forward basis both long-term interest rates and inflation will continue to
21 remain low. As discussed earlier, investment returns on equities and fixed-income debt
22 securities are expected to decline over the course of the next 20 years, due to lower

23
24 ⁷¹ *Ibid.*

⁷² *Ibid.*

1 expected GDP growth, an aging population, and declining productivity growth. As
2 previously discussed, the so-called 'natural real rate of interest' (i.e., r-star) which allows
3 the economy 'to remain on an even keel' is expected to be lower going forward than it has
4 been in the past, and this trend is indicative of a decline in the costs of capital – both long-
5 term debt and equity – relative to levels seen in the past. Although the U.S. economy
6 continues its slow recovery from the Great Recession, future GDP growth is expected to
7 decline from levels experienced in the past. While it is true that the economy may
8 experience higher growth and increased inflation in the near-term as a consequence of
9 President-elect Trump's planned infrastructure spending, the details of his fiscal stimulus
10 programs have yet to be worked out, and Fed Chair Yellen has apparently called into
11 question the need for such a fiscal stimulus boost, as the U.S. economy is presently at,
12 or near, full-employment. As noted, there is a danger that the U.S. economy could slip
13 back into recession, and this is particularly true should the value of the U.S. dollar continue
14 to rise. In the event of recession unemployment would be expected to rise, and in keeping
15 with its mandate to maintain full employment the Fed would almost certainly be forced to
16 once again cut short-term interest rates in an effort to stimulate economic growth.
17 Therefore, based on the above evidence, it is reasonable to conclude that interest rates
18 and the cost of equity will continue to remain low on a going-forward basis, as real GDP
19 growth and inflation are expected to remain below 2.0 percent for an extended period of
20 time.
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V. CAPITAL STRUCTURE AND COST OF DEBT

Q. What capital structure does APS propose in this proceeding?

A. As noted in the Company's Application (p. 6, lines 11-13), APS proposes a capital structure consisting of 44.20 percent long-term debt and 55.80 percent common equity, which is the Company's actual December 31, 2015 end of Test Year capital structure.

Q. What capital structure does RUCO recommend for APS in this proceeding?

A. As shown in Schedule JAC-1, RUCO adopts the Company's proposed capital structure consisting of 44.20 percent long-term debt and 55.80 percent common equity. RUCO's recommended capital structure reflects APS' adjusted December 31, 2015 test-year end capital structure as reported in the Company's Schedule D-1 (Page 1 of 1).

Q. What is the Company's proposed cost of long-term debt in this proceeding?

A. As noted in the Company's Application (p. 6, line 13), APS proposes a 5.13 percent embedded cost of long-term debt. As shown in the Company's Schedule D-1 (Page 1 of 1), this 5.13 percent cost rate reflects the actual cost of APS' long-term debt as of the December 31, 2015 test-year end.

Q. What is RUCO's recommended cost of long-term debt in this proceeding?

A. As shown in Schedule JAC-1, RUCO adopts the Company's proposed 5.13 percent cost of long-term debt.

1 **Q. Does APS' proposed capital structure include either preferred stock or short-term**
2 **debt?**

3 A. No, it does not. As shown in Schedule D-1 (Page 1 of 1) of the Company's filing, APS
4 proposes a capital structure consisting only long-term debt and common equity.
5

6 **VI. SELECTION OF PROXY GROUP**

7 **Q. Is it possible for RUCO to directly estimate the cost of common equity for APS?**

8 A. No, it is not, because the common stock of APS is not publicly traded. Although the
9 common stock of APS' parent company, Pinnacle West Capital Corporation ("Pinnacle
10 West" or "PWCC") is publicly-traded, as a holding company PWCC has interests in other
11 non-regulated businesses (proportionately small relative to its interest in APS). For this
12 reason, it would be inappropriate to directly estimate APS' cost of common equity from a
13 proxy group consisting only of its parent, Pinnacle West. Accordingly, RUCO employs a
14 proxy group of publicly-traded electric utility companies to indirectly estimate APS' cost of
15 equity utilizing financial market data available for each sample company.
16

17 **Q. What publicly-traded electric utility companies has RUCO selected for inclusion in**
18 **its proxy group?**

19 A. For purposes of its cost of equity analyses, RUCO's proxy group consists of twenty-six
20 (26) of the twenty-seven (27) publicly-traded electric utilities included in the proxy group
21 employed by the Company's cost of capital witness, Dr. Bente Villadsen. RUCO's proxy
22 group includes the following twenty-six publicly-traded electric utility companies: ALLETE,
23 Inc.; Alliant Energy Corporation; American Electric Power; Ameren Corporation; CMS
24 Energy Corporation; Consolidated Edison, Inc.; Dominion Resources, Inc.; DTE Energy

1 Company; Edison International; El Paso Electric Company; Entergy Corporation; Great
2 Plains Energy, Inc.; IDACORP, Inc.; MGE Energy, Inc.; NextEra Energy, Inc.; OGE
3 Energy Corporation; Otter Tail Corporation; PG&E Corporation; Pinnacle West Capital
4 Corporation; Portland Electric General Company; Public Service Enterprise Group, Inc.;
5 SCANA Corporation; Sempra Energy; Vectren Corporation; Westar Energy, Inc.; and Xcel
6 Energy Inc. These twenty-six electric utility companies are followed by the Standard
7 Large-Cap edition of *The Value Line Investment Survey*. Attachment 2 contains the most
8 recent *Value Line* quarterly update for each of RUCO's twenty-six proxy companies.
9

10 **Q. What publicly-traded electric utility companies has the Company's witness, Dr.**
11 **Villadsen, selected for inclusion in her proxy group?**

12 A. As noted, Dr. Villadsen's proxy group consists of 27 companies, among which are the
13 above referenced twenty-six companies included in RUCO's proxy group of companies,
14 plus an additional company. The additional company included in Dr. Villadsen's proxy
15 group is, CenterPoint Energy, Inc.
16

17 **Q. Did RUCO give consideration to including CenterPoint Energy, Inc. in its proxy**
18 **group of companies?**

19 A. No. A review of the financial performance metrics for CenterPoint Energy as reported by
20 *Value Line* clearly indicates that it is not representative of the electric utility industry.
21 Specifically, over the 10-year period, 2006-2015, CenterPoint Energy achieved a 16.50
22 percent average annual return on common equity, aided by returns on common equity of
23 27.8 percent, 22.0 percent and 21.9 percent, respectfully, in years 2006, 2007 and 2008.
24 This 16.50 percent 10-year average figure far exceeds the 10.31 percent 10-year

1 historical average return on common equity achieved by the 26 other sample companies
2 in RUCO's proxy group, as shown in RUCO Schedule JAC-5 (Page 1 of 1). Accordingly,
3 RUCO excludes CenterPoint Energy from its proxy group of companies for this reason.
4

5 **Q. For purposes of her analyses, does Dr. Villadsen employ a second proxy group of**
6 **companies, as well?**

7 A. Yes, she does. In addition to her 27-company electric sample proxy group, Dr. Villadsen
8 also obtains cost of equity estimates from a nuclear subsample of ten (10) electric utility
9 companies who report nuclear generation capacity of between 17 percent and 37 percent.
10 APS obtains 27 percent of its generation capacity from its Palo Verde nuclear plant, and
11 Dr. Villadsen includes in her nuclear subsample only those companies having nuclear
12 generation capacity within a range of +/- 10 percent of that of APS. As noted by Dr.
13 Villadsen, use of the nuclear subsample is intended "to capture any nuclear related
14 risks."⁷³ Dr. Villadsen's nuclear subsample consists of the following ten companies: Alliant
15 Energy, Ameren Corp., Dominion Resources, DTE Energy, Entergy, NextEra, PG&E,
16 Pinnacle West, Public Service Enterprise, and SCANA. As can be seen, the ten
17 companies included in Dr. Villadsen's nuclear subsample are also included in her larger
18 27-company electric sample proxy group.
19

20 **Q. Does RUCO also obtain cost of equity estimates using a nuclear subsample?**

21 A. Yes, in order to similarly capture any nuclear related risks, RUCO obtains cost of equity
22 estimates using a nuclear subsample. For purposes of its analyses, RUCO incorporates
23
24

⁷³ See Villadsen Direct, p. 27, line 24.

estimates obtained from the same 10-company nuclear subsample as that employed by Dr. Villadsen.

VII. DCF ANALYSIS

Q. What is the theory and methodological basis of the DCF model?

A. The DCF model is one of the oldest and most commonly used models for estimating the COE for public utilities, and the only one which intrinsically takes into consideration the price investors are willing to pay for a given unit of return. The DCF is based on the "dividend discount model" of financial theory, which maintains that the value (price) of any security or commodity is the discounted present value of all future cash flows.

The most common variant of the DCF model assumes that dividends are expected to grow at a constant rate and the following formula will generate the cost of capital.

$$K = \frac{D}{P} + g$$

Where: K = cost of equity
 P = current price
 D = current dividend rate
 K = discount rate (cost of capital)
 g = constant rate of expected growth

This formula essentially recognizes that the return expected, or required, by investors is comprised of two factors: the dividend yield (current income) and expected growth in dividends (future income).

1 **Q. Please explain how RUCO employed the DCF model.**

2 A. For purposes of its analysis, RUCO employed the constant growth DCF model. In doing
3 so, RUCO combined the current dividend yield for each proxy group utility stock with
4 several indicators of expected dividend growth.
5

6 **Q. How did RUCO derive the dividend yield component of the DCF equation?**

7 A. Several different methods can be used to compute the dividend yield component in the
8 constant growth DCF model. However, for purposes of its analysis RUCO utilized the
9 Gordon quarterly compounding method to compute the dividend yield component, as it
10 gives recognition to the timing of dividend payments and dividend increases. The Gordon
11 quarterly compounding method is expressed as follows:

$$\text{Yield} = \frac{D_0(1 + 0.5g)}{P_0}$$

12
13
14 The current (P_0) stock price in my yield calculation represents the average closing stock
15 price for each proxy company for the most recent three month period (September –
16 November, 2016). The current (D_0) dividend is the current annualized dividend rate for
17 each proxy company.
18

19 **Q. How does RUCO estimate the dividend growth (g) component of the DCF equation?**

20 A. In estimating the dividend growth rate in its DCF analysis, RUCO gives consideration to
21 the following five indicators of growth:
22

- 23 1. Five-year average (2011-2015) earnings retention (i.e., fundamental)
24 growth, as reported by *Value Line*;

2. Five-year average of historic growth in earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS), as reported by *Value Line*;
3. Years 2016, 2017 and 2019-2021 projections of earnings retention growth, as reported by *Value Line*;
4. Years 2013-2015 to 2019-2021 projections of EPS, DPS, and BVPS, as reported by *Value Line*; and,
5. Five - year projections of EPS growth, as reported by Yahoo Finance.

RUCO believes this combination of growth indicators to be a representative and appropriate set with which to estimate investor expectations of dividend growth for its proxy group of sample companies, as each is a determinant of dividend growth. Additionally, these growth indicators are reflective of the types of information that investors normally take into consideration when making an investment decision.

Q. Please describe RUCO's DCF calculations.

A. RUCO's DCF analysis is presented in Schedule JAC-3, Pages 1 through 4. Page 1 presents RUCO's overall DCF cost of equity estimation results from both its (i) electric sample companies and (ii) nuclear subsample companies. As can be seen, "raw" DCF calculations are presented on several bases: mean, median, composite-mean and composite-median. Page 2 presents the calculation of the dividend yield for each proxy company prior to adjustment for growth. Pages 3 and 4 present RUCO's historical and projected growth rate calculations for its proxy group of companies.

1 **Q. What does RUCO conclude from its DCF cost of equity estimation analyses?**

2 A. The DCF cost of equity rates obtained for RUCO's electric sample proxy group fall within
3 the range of 7.24 percent to 8.45 percent. The DCF cost estimates obtained for RUCO's
4 nuclear subsample proxy group fall within the range of 7.21 percent to 8.85 percent. The
5 highest DCF estimate is 8.85 percent, as derived from RUCO's nuclear subsample.
6 RUCO concludes that 8.85 percent represents the current DCF-derived cost of equity for
7 the nuclear subsample proxy group. Accordingly, RUCO adopts a DCF-derived cost of
8 equity of 8.85 percent for the Company, which is based on the high end of the DCF range
9 within RUCO's nuclear subsample. For purposes of its overall recommended cost of
10 equity in this proceeding, RUCO assigns a weighting factor of 40 percent to this 8.85
11 percent DCF cost of equity estimate.

12
13 **VIII. CAPM ANALYSIS**

14 **Q. Please describe the theory and methodological basis of the CAPM.**

15 A. Developed in the 1960s and 1970s as an extension of modern portfolio theory, the CAPM
16 describes the relationship between a security's investment risk and its market rate of
17 return.⁷⁴ This relationship identifies the rate of return which investors expect a security to
18 earn so that its market return is comparable with the market returns earned by other
19 securities that have similar risk. The relationship is specified by the Security Market Line
20 (SLM) that indicates the relationship between each security or portfolio's "beta" and its
21

22
23
24

⁷⁴ The CAPM makes the following assumptions: 1) single holding period; 2) perfect and competitive securities market; 3) no transaction costs; 4) no restrictions on short selling or borrowing; 5) the existence of a risk-free rate; and 6) homogeneous expectations.

1 resulting return. Beta is a measure of relative risk (i.e., volatility) between a given equity
2 security and the market as a whole.

3
4 **Q. How is the CAPM derived?**

5 A. The general form of the CAPM is:

6
$$K = R_f + \beta (R_m - R_f)$$

7 Where: $K = \text{cost of equity}$

8 $R_f = \text{risk free rate}$

9 $R_m = \text{return on market}$

10 $\beta = \text{beta}$

11 $R_m - R_f = \text{market risk premium}$
12

13 **Q. Can you please identify the strengths of using the CAPM model in your analysis?**

14 A. The CAPM is cited as having the following strengths (1) it is based on the concept of risk
15 and return; (2) it is company specific as it relates to the specific beta's within the industry;
16 (3) it has widespread use as it recognizes that investors can and do diversify; (4) it's highly
17 structured and easy to apply when using the assumptions of the model; (5) the model is
18 formulistic and the data used in the computations is readily available; (6) it is a forward
19 looking concept; and (7) it is a method for converting changes in interest rates to the cost
20 of equity.
21

22 **Q. What risk-free (R_f) rate does RUCO use in its CAPM analysis?**

23 A. For purposes of its CAPM analysis, RUCO uses a risk-free rate of 2.57 percent. RUCO's
24 risk-free rate represents a 3-month average yield on the 30-year long-term U.S. Treasury

1 Bond measured over the period, September - November 2016. RUCO's use of a 3-month
2 average risk-free rate in its CAPM analysis is consistent with use of a 3-month average
3 closing stock price to compute the dividend yield component for each sample company in
4 RUCO's constant growth DCF analysis. The calculation of RUCO's risk-free rate is
5 presented in Schedule JAC-4, Page 1.

6
7 **Q. Is it customary to use the yield on U.S. Treasury securities as the risk-free (R_f)**
8 **rate in the CAPM?**

9 A. Yes, because debt securities issued by the United States Department of the Treasury are
10 considered to be free of default risk. Two general types of U.S. Treasury securities are
11 most often used as the risk free (R_f) component, short-term U.S. Treasury bills and long-
12 term U.S. Treasury bonds. For purposes of its analysis, RUCO employs the yield on 30-
13 year U.S. Treasury bonds as a proxy for the risk-free rate because yields on long-term
14 Treasury bonds more closely match the useful life of the plant assets to be funded by the
15 Company's common equity capital.

16
17 **Q. Did RUCO consider use of a forecasted long-term Treasury bond rate as the risk-**
18 **free rate to be used in its CAPM analysis?**

19 A. No. The appropriate interest rate to be used in the CAPM is the current rate borne by
20 investors in the market place. Use of a forecasted risk-free rate overstates cost of equity
21 estimates derived from the CAPM. Use of a current, or recent average, long-term
22 Treasury rate is reflective of investor's current expectations, and as such is the
23 appropriate risk-free rate to be used in the CAPM.

1 **Q. What beta coefficients does RUCO employ in its CAPM analysis?**

2 A. RUCO employs the most recent *Value Line* beta reported for each sample company in its
3 proxy group. Once again, beta⁷⁵ is a measure of the relative risk, or volatility, of a
4 particular stock in relation to the market as a whole. The overall market is assumed to
5 have a beta of 1.0. Stocks having beta coefficients less than 1.0 are considered to be
6 less risky than the market, whereas stocks having betas greater than 1.0 are considered
7 to be more risky than the market. As regulated entities granted natural monopoly status,
8 public utilities are considered less risky than the market and typically have betas less than
9 1.0.

10
11 **Q. How does RUCO estimate the market risk premium ($R_m - R_f$) component?**

12 A. The market risk premium component ($R_m - R_f$) represents the investor-expected differential
13 return from common stocks above that of the risk-free rate, or government bonds. For
14 purposes of its analysis, RUCO estimated the market risk premium by comparing annual
15 realized returns on equity for the S&P 500 group with annual yields on 20-year long-term
16 Treasury bonds over the period, 1978-2015. As shown in Schedule JAC-4, Page 2, the
17 market risk premium component used in RUCO's CAPM represents the average of
18 differential returns on equity for the S&P 500 group and the annual yields on 20-year U.S.
19 Treasury bonds over this 1978-2015 period of time. RUCO determined the average ROE
20 on the S&P 500 to be 13.70 percent, and the average 20-year U.S. Treasury bond yield
21 to be 6.83 percent. Thus, based upon these returns RUCO concluded the market risk
22 premium ($R_m - R_f$) component in its CAPM analysis to be 6.87 percent.

23
24

⁷⁵ See Attachment 2 – Individual proxy companies beta's identified

1 **Q. What did RUCO conclude the overall CAPM cost of equity to be for both its electric**
2 **sample and nuclear subsample proxy groups?**

3 A. As shown in Schedule JAC-4, Page 1, RUCO obtained a CAPM derived cost of equity
4 estimate for its 26-company electric sample of 7.40 percent, and for its 10-company
5 nuclear subsample RUCO obtained a CAPM derived cost of equity estimate of 7.28
6 percent. For purposes of its overall recommended cost of equity in this proceeding,
7 RUCO assigns a weighting factor of 20 percent to both the 7.40 percent CAPM estimate
8 obtained from its electric sample companies and the 7.28 percent CAPM estimate
9 obtained from its nuclear subsample proxy group.

10
11 **IX. CE ANALYSIS**

12 **Q. Please describe the basis of the Comparable Earnings (CE) methodology.**

13 A. The CE method is designed to measure returns expected to be earned on the original
14 cost book value of similar risk business enterprises, in this case RUCO's 27-company
15 electric sample and 10-company nuclear subsample proxy groups. Thus, it provides a
16 direct measure of the fair return, since it translates into practice the competitive principle
17 upon which regulation rests, and provides additional support that the Company will be
18 allowed the opportunity to earn a fair rate of return.

19
20 **Q. How did RUCO apply the CE methodology?**

21 A. RUCO applied the CE methodology by examining realized returns on equity for its proxy
22 group of sample companies over the 10-year period, 2006-2015, as well as projected
23 returns on equity for 2016 and 2017, and 2019-2021.

Q. What cost of equity results were obtained from RUCO's CE analysis?

A. As shown in Schedule JAC-5, RUCO calculated historical returns on equity for both its electric sample and nuclear subsample proxy groups over both a 5- and 10-year period, and projected returns on equity over the 5-year period, 2016-2020. Based upon its analysis, RUCO generated mean, median, and average of mean and median CE cost of equity estimates for its electric sample proxy group ranging from a low of 9.92 percent to a high of 10.31 percent; CE cost of equity estimates for RUCO's nuclear subsample companies ranged from a low of 10.13 percent to 11.06 percent. The results of RUCO's CE cost of equity analysis based on returns on equity for the proxy group can be summarized as follows:

RUCO's Electric Sample

	<u>Historic ROE's</u>	<u>Projected ROE's</u>
Mean	10.18 % - 10.31 %	10.27 %
Median	9.98 % - 10.10 %	9.92 %
Average of Mean and Median	10.14 % - 10.15 %	10.10 %

RUCO'S Nuclear Subsample

	<u>Historic ROE's</u>	<u>Projected ROE's</u>
Mean	10.60 % - 11.06 %	10.83 %
Median	10.13 % - 10.30 %	10.17 %
Average of Mean and Median	10.45 % - 10.60 %	10.50 %

For purposes of its analysis, RUCO adopts the 11.06 percent mean 10-year historical average cost of equity estimate as its CE-derived cost of equity estimate for the Company. For purposes of its overall recommended cost of equity in this proceeding, RUCO assigns a weighting factor of 40 percent to this 11.06 percent CE estimated cost of equity.

X. RUCO RESPONSE TO COMPANY'S COST OF CAPITAL WITNESS DR. BENTE VILLADSEN

Q. Have you reviewed the cost of capital testimony of APS witness, Dr. Bente Villadsen?

A. Yes, I have.

Q. Briefly summarize Dr. Villadsen's cost of equity estimation methodology and recommendations.

A. Dr. Villadsen recommends a 10.50 percent cost of equity for APS, based on estimates derived from two versions of the CAPM (i.e., the traditional CAPM and the empirical CAPM), two versions of the DCF model (i.e., the constant growth DCF model and the multi-stage DCF model), and one version of the Risk Premium model for her 28-company electric sample and 10-company nuclear subsample proxy groups. As a test for reasonableness to the market-based results obtained from these models, Dr. Villadsen performs a summary analysis of allowed ROEs for integrated electric utilities. The following is a summary of the cost of equity estimates obtained from her analysis:

Return on Equity	
	Range of Estimates For Proxy Group
CAPM-based Methods	10.0% - 10.5%
DCF-based Methods	9.9% - 10.8%
Risk Premium Method	10.3%

1 For purposes of her recommended cost of equity, Dr. Villadsen concludes that APS should
2 be in the upper half of the range to give recognition to its significant portfolio of nuclear
3 generation.

4
5 **Q. In direct testimony (p. 23), Dr. Villadsen states that in implementing the CAPM and**
6 **risk premium models, she gives consideration to “the downward biased risk-free**
7 **rate as well as the elevated MRP.” As evidence that the risk-free rate is ‘downward**
8 **biased,’ Dr. Villadsen includes in her direct testimony (pp. 11-16) a discussion of**
9 **how the yield spread between 20-year utility bonds and 20-year government bond**
10 **yields has widened. Please summarize Dr. Villadsen’s yield spread analysis.**

11 **A.** Dr. Villadsen’s yield spread analysis is presented in Figure 3 and Figure 4 (pp. 12-13) of
12 her direct testimony, and in Attachment BV-3DR (Page 1 of 1). As shown, Figure 3
13 presents the yield spread between 20-year BBB-rated utility bonds and the 20-year
14 Treasury bond, with the spread being 193 basis points as of October 31, 2011 and 259
15 basis points as of February 29, 2016. Figure 4 presents the comparable yield spread
16 between 20-year A-rated utility bonds and the 20-year Treasury bond, with the spread
17 being 147 basis points as of October 31, 2011 and 183 basis points as of February 29,
18 2016. Dr. Villadsen presents this information in order to show that the yield spread has
19 increased since the Company’s last rate filing. As noted in Dr. Villadsen’s direct testimony
20 (p. 13), the information presented in Attachment BV-3DR (Page 1 of 1) is intended to
21 demonstrate that the yield curve has increased relative to its pre-crisis levels, as
22 evidenced by an average 0.93 yield spread for A-rated 20-year utility bonds and an
23 average 1.23 yield spread for BBB-rated 20-year utility bonds over the period, April 1991
24 – 2007. Dr. Villadsen concludes (p. 13) with the following observation: “At the end of

1 February, 2016 the BBB spread stood at 2.56%, which is approximately 136 basis points
2 higher than prior to the 2008-09 financial crisis. At the same time the A rated utility bond
3 yield was 1.83% for an increase of about 90 basis points over the pre-crisis level.”
4

5 **Q. As noted earlier, Dr. Villadsen’s direct testimony was filed on June 1, 2016, yet as**
6 **indicated above she selects “the end of February, 2016” (i.e., February 29, 2016) as**
7 **the point in time to make her yield spread comparison. Did the financial markets**
8 **experience any unusual trading in the month of February, 2016, and if so would this**
9 **account for an increase in the yield spread at that time.**

10 **A.** Yes, the equity markets experienced a sharp sell-off in the month of February as investors
11 opted instead to purchase so-called “haven assets,” such as gold and U.S. Treasury debt
12 securities, and yes, this did serve to widen the yield curve between utility bonds and
13 government bonds at that time. Market trading was particularly heavy on February 11,
14 2016, with the Dow Jones Industrial Average (“DJIA”) closing at a 2-year low, the Standard
15 & Poor’s 500 (“S&P 500”) tumbling to its lowest close in nearly two years, the price of gold
16 rising almost \$60 per ounce, while the yield on the 10-year Treasury Note closed at its
17 lowest level in almost three years.⁷⁶ The prices of bonds rise as debt yields fall.
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20
21
22

23
24 ⁷⁶ Ismailidou, Ellie and Sjolín, Sara, “Dow Closes at 2-Year Low, Dogged by Global Market Turmoil,”
MarketWatch.com (February 11, 2016) [http://www.marketwatch.com/story/dow-futures-sink-more-than-200-
points-as-global-rout-gains-pace-2016-02-11](http://www.marketwatch.com/story/dow-futures-sink-more-than-200-points-as-global-rout-gains-pace-2016-02-11)

1 **Q. Would you describe the market activity of February 2016 as being an “outlier” when**
2 **compared to normal, or ordinary, market activity?**

3 A. Yes, I would. The market volatility of February 2016, generally, and that of February 11,
4 2016, in particular, is certainly not representative of typical market trading activity, and as
5 such I would consider it to be, an “outlier.”
6

7 **Q. How does use of this “outlier” affect Dr. Villadsen’s analysis?**

8 A. It allows Dr. Villadsen to obtain a wider measure of the current yield spread, as she
9 selected February 29, 2016 as the date to measure the spread between yields on 20-year
10 utility bonds and 20-year government bonds in her analysis. As will be discussed, having
11 obtained a wide measure of the yield spread between utility bonds and government
12 bonds, Dr. Villadsen then uses it as a predicate for making upward “normalization”
13 adjustments in both her CAPM, risk premium, and DCF models.
14

15 **Q. Has the yield spread between utility bonds and government bonds since narrowed?**

16 A. Yes, it has. Although I was unable to obtain yield spread data on 20-year maturity A- and
17 BBB-rated utility bonds, as shown in Exhibit JAC-C (Page 1 of 3), I present current
18 measures of the yield spread between both (i) 10-year A- and BBB-rated utility bonds and
19 the 10-year Treasury Note, and (ii) 30-year A- and BBB-rated utility bonds and the 30-year
20 Treasury Bond. For purposes of comparison, the average yield spreads for 20-year
21 maturity A- and BBB-rated utility bonds from Dr. Villadsen’s Attachment BV-3DR are
22 presented for the periods, April 1991 – 2007, and August 2008 – February 2016.
23
24

1 As shown, as of November 7, 2016 the yield spread between 10-year A-rated utility bonds
2 and the 10-year Treasury Note was approximately 100 basis points, and as of December
3 12, 2016 had narrowed to approximately 92 basis points. Conversely, the yield spread
4 between 10-year BBB-rated utility bonds and the 10-year Treasury Note as of November
5 7, 2016 was approximately 118 basis points, and narrowed to approximately 114 basis
6 points as of December 12, 2016. As for differences in 30-year maturity debt, as of
7 November 7, 2016 the yield spread between 30-year A-rated utility bonds and the 30-year
8 Treasury Bond was approximately 133 basis points, and narrowed to approximately 126
9 basis points as of December 12, 2016. Conversely, the yield spread between 30-year
10 BBB-rated utility bonds and the 30-year Treasury Bond was approximately 144 basis
11 points as of November 7, 2016, and narrowed to approximately 135 basis points as of
12 December 12, 2016. Detail for the above 10- and 30-year yield spreads for A- and BBB-
13 rated utility bonds was obtained from the investment firm of Raymond James, and is
14 presented as Exhibits JAC-C, Pages 2 and 3. As shown, the yield spreads noted above
15 are presented as bar graphs; hence, the term "approximately" to describe them.

16
17 **Q. As presented in Exhibit JAC-C (Page 1 of 3), do the recent 10- and 30-year yield**
18 **spreads for A- and BBB-rated utility bonds serve to refute Dr. Villadsen's assertion**
19 **that today's yield spreads are elevated relative to pre-crisis levels?**

20 **A.** Yes, for when taking into consideration differences in maturities, the current yield spreads
21 for A- and BBB-rated 10- and 30-year utility bonds appear to be right in line with the
22 average yield spreads for A- and BBB-rated 20-year utility bonds as presented in Dr.
23 Villadsen's direct testimony for the pre-crisis period, April 1991 – 2007. In part, this is
24 attributable to yields on U.S. Treasury debt having risen since the election of Donald

1 Trump as President, and in part due to yields on A- and BBB-rated utility bond debt having
2 fallen from their pre-crisis levels, something which Dr. Villadsen makes no mention of in
3 her direct testimony.

4
5 **Q. In direct testimony, Dr. Villadsen asserts that a widening yield spread between**
6 **utility bonds and government bonds is evidence that the MRP has increased.⁷⁷**
7 **Given that RUCO's analysis clearly demonstrates that the yield spread between**
8 **utility bonds and government bonds is currently at pre-crisis (i.e., April 1991 – 2007)**
9 **levels, is there legitimacy to Dr. Villadsen's claim in this regard?**

10 A. No, there is not.

11
12 **Q. In direct testimony (p. 14), Dr. Villadsen cites to interest rate forecasts made by the**
13 **Congressional Budget Office ("CBO") stating that the CBO predicts an increase in**
14 **the yield on the 10-year Treasury Note of "approximately 200 basis points over the**
15 **coming years." Would you care to respond to this statement?**

16 A. Yes, but only to point out that the CBO predictions cited to by Dr. Villadsen are from CBO's
17 annual Budget and Economic Outlook: 2015-2025, published in January 2015. As noted,
18 Dr. Villadsen's direct testimony was docketed on June 1, 2016, and at that time CBO's
19 annual Budget and Economic Outlook: 2016-2026, published in January 2016, was
20 available to her. Had Dr. Villadsen elected to cite to forecasts from this newly issued CBO
21
22
23
24

⁷⁷ See Villadsen Direct, p.15, lines 1-5; p. 22, lines 5-6; and p.33, lines 11-12.

1 publication, she would have reported a lower forecasted yield on the 10-year Treasury
2 Note.⁷⁸

3
4 **Q. To your knowledge, has there been a subsequent update by CBO to its budget and**
5 **economic outlook covering the period, 2016-2026?**

6 A. Yes, there has. The CBO published an update to its 2016-2026 budget and economic
7 outlook in August 2016, and in doing so further lowered its forecast for the yield on the
8 10-year Treasury Note.⁷⁹

9
10 **Q. In direct testimony (p. 14), Dr. Villadsen states that higher forecasted yields on the**
11 **10-year Treasury Note by CBO and the other sources to which she cites is**
12 **“consistent with the current downward pressure on Government bond yields,**
13 **which has largely been caused by the Federal Reserve’s quantitative easing**
14 **program and general stimuli of the U.S. economy.” Would you care to respond to**
15 **this statement?**

16 A. Yes, I would. First, interest rates have been in secular decline since the early to mid-
17 1980s, long before the Fed was forced to take action to avoid financial collapse of the
18 U.S. economy in 2008, and Dr. Villadsen’s comments demonstrate an unwillingness to
19 acknowledge this fact. Second, inflation also has experienced a significant decline over
20 the last 30-plus years. With low inflation comes lower interest rates and lower capital
21

22
23 ⁷⁸ Congressional Budget Office, “The Budget and Economic Outlook: 2016-2026,” January 2016, p. 57.
<https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/51129-2016Outlook.pdf>

24 ⁷⁹ Congressional Budget Office, “An Update to the Budget and Economic Outlook: 2016-2026,” August 2016,
p. 74.
<https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/51908-2016outlookupdate-2.pdf>

1 costs, including the market cost of equity. Rather than acknowledge this fact, however,
2 Dr. Villadsen chooses instead to attribute the Fed's accommodative monetary policies for
3 the "*current downward pressure on Government bond yields.*" Third, as previously
4 discussed in my testimony, due to lower expected GDP growth and continued low
5 inflation, interest rates and other capital costs are expected to remain low going forward.
6 That this is the case is not due to actions taken by the Fed, as Dr. Villadsen would have
7 us believe, but rather as a consequence of declining productivity growth and changing
8 demographics within the work force. The findings of the McKinsey report support a
9 conclusion that investment returns are expected to decline over the next 20-year period,
10 and public statements made by Fed officials and the publications issued by the Fed to
11 which I cite in my direct testimony clearly suggest an extended future period of lower GDP
12 growth, continued low inflation and continued low interest rates.

13
14 **Q. Does Dr. Villadsen's cost of capital testimony address the issue of inflation and the**
15 **underlying implications it has regarding interest rates and the cost of capital?**

16 A. No. A word search of Dr. Villadsen's direct testimony reveals that the word, "inflation,"
17 appears only four times,⁸⁰ and without exception on each occasion the word is used within
18 the context of a discussion of the fair value rate of return to be authorized for APS in this
19 proceeding, nothing more.

20
21
22
23
24

⁸⁰ On pages: 3 (line 12); 57 (line 14); and 59 (line 6, and in footnote 60).

1 **Q. Does Dr. Villadsen's cost of capital testimony address the issue of GDP growth and**
2 **the underlying implications it has regarding interest rates and the cost of capital?**

3 A. No. A word search of Dr. Villadsen's direct testimony reveals that the term, "GDP,"
4 appears only twice.⁸¹ On one occasion, the term appears in a discussion relating to the
5 fair value rate of return to be authorized APS; on the other, it appears within the context
6 of a discussion of the DCF model, and Dr. Villadsen's stated belief that a model which
7 incorporates "current GDP growth forecasts" would "yield unreasonable results."⁸²
8

9 **Q. In keeping with her belief that the government bond rate is "downward biased" and**
10 **"driven by monetary policy rather than market factors," Dr. Villadsen states that it**
11 **is "necessary to normalize" the government bond rate used as the risk-free rate in**
12 **a CAPM analysis.⁸³ Would you care to respond to this statement?**

13 A. Yes, I would. First, as noted earlier in my direct testimony, and contrary to Dr. Villadsen's
14 assertion otherwise, yields on long-term Treasury securities are largely determined by
15 investors in the market place—based upon their perception of growth opportunities and
16 inflation expectations—and not by actions taken by the Fed to control the front-end of the
17 yield curve. Second, as previously discussed in my direct testimony, the appropriate
18 interest rate to be used as the risk-free rate in the CAPM is the rate actually borne by
19 investors in the market place. For purposes of her CAPM analyses, Dr. Villadsen employs
20 the 20-year government bond rate as the risk-free rate; thus, the appropriate risk-free rate
21 in her CAPM analyses is either the current spot yield on the 20-year Treasury Bond, or a
22

23
24 ⁸¹ On pages: 41 (line 18); and 59 (in footnote 60).

⁸² See Villadsen Direct, p. 41, lines 18-19.

⁸³ See Villadsen Direct, p. 14, lines 20-23.

1 recent average yield. Third, Dr. Villadsen's use of a forecasted risk-free rate in her CAPM
2 analyses overstates the cost of equity estimates obtained from the CAPM. Fourth, the
3 manner in which Dr. Villadsen "normalizes" the risk-free rate in her CAPM analyses is
4 suggestive of an expectation of mean reversion (i.e., that interest rates, in particular, and
5 the costs of capital, generally, are soon to return to their pre-crisis levels), as she
6 incorporates not only a forecasted 3.93 percent risk-free rate into her analyses, but a 4.73
7 percent risk-free rate, as well.

8
9 **Q. Please describe the manner in which Dr. Villadsen "normalizes" the risk-free rate**
10 **in her CAPM analyses.**

11 A. As discussed in her direct testimony (pp. 30-31), Dr. Villadsen uses the yield on the 20-
12 year Treasury Bond as the risk-free rate, and "normalizes" that rate based on Blue Chip's
13 forecasted 3.4 percent yield on the 10-year Treasury Note as of Q4, 2017. To this 3.4
14 percent forecasted rate she then makes a 53 basis point upward adjustment, obtaining
15 what she refers to as "a lower bound on the risk-free rate" of 3.93 percent ($3.40\% + 0.53\%$
16 $= 3.93\%$). As justification for employing a 4.73 percent risk-free rate in her analyses, Dr.
17 Villadsen states that she "adds a portion of the increase in yield spread to the risk-free
18 rate to take the downward pressure on the government bond yield into account."
19 (emphasis added)

1 **Q. Having previously demonstrated that the current yield spread between 10- and 30-**
2 **year A- and BBB-rated utility bonds and government bonds are in line with the**
3 **average yield spreads for A- and BBB-rated 20-year utility bonds and government**
4 **bonds for the pre-crisis period, April 1991 – 2007, is Dr. Villadsen justified in**
5 **incorporating a 4.73 percent risk-free rate into her CAPM and risk premium**
6 **analyses?**

7 A. No, because the premise upon which she justifies inclusion of a 4.53 percent risk-free rate
8 into her analysis has been shown to be baseless.

9
10 **Q. You mentioned earlier that in addition to the so-called “downward biased risk-free**
11 **rate,” Dr. Villadsen also gives consideration to “the elevated MRP” when**
12 **implementing her CAPM and risk premium models. What evidence does Dr.**
13 **Villadsen provide to support her claim that the MRP is “elevated?”**

14 A. As discussed in her direct testimony (pp. 17-22), Dr. Villadsen indicates that there is a
15 positive relationship between the expected MRP and volatility, stating that “the MRP tends
16 to increase when market volatility is high.” As evidence that the current level of market
17 volatility is elevated, she cites to the VIX index, which measures the 30-day implied
18 volatility on the S&P 500 index. Dr. Villadsen states that while “the long-term average for
19 the VIX is about 20, the current level is elevated and was above 28 on February 11, 2016.”
20 She goes on to say that “[d]uring the more recent period, the VIX spiked in August at
21 about 40.” Based on these statements, she concludes that “market volatility has been
22 higher in the early part of 2016 than it has been in recent periods.”⁸⁴ (emphasis added)

23
24

⁸⁴ See Villadsen Direct, p. 17, lines 13-21)

1 **Q. Does the August date to which Dr. Villadsen makes reference regarding the VIX**
2 **index having spiked relate to calendar year 2016?**

3 A. No, it does not. The August date to which Dr. Villadsen alludes took place in calendar
4 year 2015, and thus is not representative of market volatility "in the early part of 2016."
5

6 **Q. Did RUCO conduct an analysis of VIX index data to determine the level of market**
7 **volatility over a recent 12-month period, and if so, what do you conclude regarding**
8 **the level of market volatility in 2016?**

9 A. Yes, RUCO conducted an analysis of market volatility based on VIX index data for the 12-
10 month period, December 2105 – November 2016. As shown in RUCO Exhibit JAC-D, the
11 monthly high, low, and average close on the VIX index is shown for each month, as well
12 as the number of trading days in each month, and the number of days in which the VIX
13 index traded above a level of 20.0. In addition, average high, average low, and average
14 close data is presented on a quarterly basis for (i) the 12-month period, Dec 2015 – Nov
15 2016, (ii) the 9-month period, Mar – Nov 2016, (iii) the 6-month period, June – Nov 2016,
16 and (iv) the 3-month period, Sept – Nov 2016. Finally, the number of trading days, the
17 days traded above 20.0 and the percent of days traded above 20.0 is provided on a
18 quarterly basis.
19

20 As can be seen, market volatility was highest in the first quarter, with the average close
21 on the VIX index in both January and February, 2016 exceeding 20.0, and the VIX index
22 trading above 20.0 on each trading day in each of those months. However, beginning in
23 the month of March 2016, the level of market volatility as measured by the VIX index
24 declined significantly. The key takeaways from the data presented are as follows:

- the average close on the VIX index was well below 20.0 over a 3-, 6-, 9-, and 12-month period,
- over a 12-month period, the VIX index traded above 20.0 on 61 of the 257 trading days, and of these 61 days, 46 came within the first 3-month period, December 2015 – February 2016,
- in 5 of 11 months in 2016 (i.e., April, May, July, August, and October), the VIX index did not trade above 20.0, and
- in 2 of 11 months in 2016 (i.e., March and September) the VIX index traded above 20.0 on only 1 day

Based upon the above evidence, RUCO concludes that the level of market volatility as measured by the VIX index in the most recent 12-month period, December 2015-November 2016, to be low, and as such, does not warrant a finding that the MRP is increased. It should further be noted that the equity markets have since recovered from the sell-off which took place in January and February of 2016, as the DJIA recently broke through 19,000 for the first time, and is currently approaching 20,000. That this could happen in the absence of significant market volatility, as measured by the VIX index, serves to further underscore the legitimacy of such a conclusion.

Q. In direct testimony (p. 19), Dr. Villadsen asserts that the MRP has increased since the 2008-09 financial crisis, and as support cites to a study done by Duarte and Rosa.⁸⁵ Mr. Cassidy, have you had an opportunity to review this study?

A. Yes, I have.

⁸⁵ Duarte, Fernando and Rosa, Carlo, "The Equity Risk Premium: A Review of Models," *Federal Reserve Bank of New York, Economic Policy Review* (December 2015), pp. 39-57.

1 **Q. Having reviewed the study, did you find inconsistencies in statements made by Dr.**
2 **Villadsen in direct testimony to those made by the authors of the study?**

3 A. Yes, I did. In direct testimony Dr. Villadsen states that "the market equity risk premium is
4 a forward-looking concept."⁸⁶ (emphasis added) As noted earlier, Dr. Villadsen employs
5 two values for the market equity risk premium, one of which is a 7.0 percent average
6 historical ERP covering the period, 1926-2014, computed as the differential return on
7 equities over the return on risk-free government bonds. When discussing the ERP results
8 obtained as a historical mean of realized returns, however, the authors of the study
9 described the draw backs of the methodology as follows:

10 "The main drawbacks are that it is purely backward-looking and that it
11 assumes the future will behave like the past—in other words, that the
12 mean of excess returns is either constant or very slow-moving over
13 time, giving very little time-variation in the ERP. The main choice is how
14 far back into the past we should go when computing the historical
15 mean."⁸⁷ (emphasis added)

16 In the interest of fair disclosure, RUCO obtained the 6.87 percent risk premium utilized in
17 its CAPM analysis from historical data, as well; however, the 1978-2015 time period
18 utilized to measure the ERP was considerably shorter than that used by Dr Villadsen.

19 **Q. Mr. Cassidy, do you know what risk-free rate the authors used when conducting**
20 **their study of the ERP?**

21 A. In reading the study, I found no mention of the Treasury debt instrument used by the
22 authors as the risk-free rate. However, in her direct testimony (p. 33, lines 5-7), Dr.
23 Villadsen indicates that the 30-day T-Bill rate was used as a proxy for the risk-free rate by

24 ⁸⁶ See Villadsen Direct, p. 31, lines 17-18.

⁸⁷ Duarte & Rosa (2015), p.42.

1 the authors in obtaining "the average estimated MRP" as presented in Chart 3 of the
2 Duarte & Rosa (2015) study, and re-produced in Figure 6, on page 20, of her direct
3 testimony.

4
5 **Q. What is the current yield on the 30-day T-Bill?**

6 A. As of November 30, 2016, the 3-month average yield on the 30-day T-Bill was 0.24
7 percent.

8
9 **Q. Among the various Treasury debt securities available for purchase by investors,**
10 **does the 30-day T-Bill have the shortest maturity?**

11 A. Yes, it does, and as a consequence it also has the lowest yield.

12
13 **Q. For purposes of the ERP study conducted by Duarte and Rosa, over what period of**
14 **time do the authors obtain estimates for the ERP from the 20 models used in the**
15 **study?**

16 A. In the study, the authors obtain estimates for the ERP over the period, January 1960 –
17 June 2013.

18
19 **Q. Would it be safe to say that yields on the 30-day T-Bill were significantly higher over**
20 **most of the above referenced 50+ year period covered by the Duarte and Rosa**
21 **study than they are today?**

22 A. Yes.

1 **Q. Given this fact, does use of today's significantly lower 30-day T-Bill rates as the**
2 **risk-free rate in the computation of the ERP result in a higher ERP estimate?**

3 A. Yes, it does, which is why Duarte and Rosa arrived at the following conclusion:

4 "In addition to estimating the level of the ERP, we investigate the
5 reasons behind its recent behavior. Because the ERP is the difference
6 between expected stock returns and the risk-free rate, a high estimate
7 can be the result of expected stock returns being high or risk-free rates
8 being low. We conclude that the ERP is high because Treasury yields
9 are unusually low."⁸⁸ (emphasis added)

10 **Q. In view of the above discussion, is there reason to call into question Dr. Villadsen's**
11 **assertion that the market equity risk premium is currently elevated?**

12 A. Yes.

13 **Q. This being the case, in your judgment does Dr. Villadsen's use of an 8.0 percent**
14 **forecasted MRP obtained from Bloomberg in her CAPM and Risk Premium analyses**
15 **serve to further overstate her recommended cost of equity for APS in this**
16 **proceeding?**

17 A. Yes, it does.

18 **Q. Please explain why cost of equity estimates obtained from the ECAPM should not**
19 **be relied upon.**

20 A. First, the ECAPM modification to the traditional CAPM is predicated on the notion that
21 cost of equity estimates derived from the CAPM are biased downward for companies
22 having a beta coefficient less than 1.0, and biased upward for companies having a beta
23

24

⁸⁸ Duarte & Rosa (2015), p.40.

1 coefficient greater than 1.0. As previously discussed in my direct testimony, regulated
2 utilities typically have betas less than 1.0 because investors consider them to be less risky
3 than the market. As such, the upward adjustment to beta effectuated by use of the
4 ECAPM is unwarranted as it illogically assumes that beta coefficients for regulated public
5 utilities will approach 1.0 over time. Second, for purposes of her CAPM analyses Dr.
6 Villadsen relies upon beta values provided by *Value Line* for each of her sample
7 companies. However, beta values reported by *Value Line* are, themselves, "adjusted
8 betas," and serve to increase the beta coefficient for companies having a beta less than
9 1.0, and decrease the beta coefficient for companies having a beta greater than 1.0.
10 Thus, the additional upward adjustment to beta in the ECAPM is an unnecessary
11 redundancy, and only serves to overstate the estimated cost of equity. As evidence of
12 such overstatement, Figure 12, on page 39, of Dr. Villadsen's direct testimony presents
13 the results of her CAPM and ECAPM analyses for both her electric sample and nuclear
14 subsample proxy groups, as measured over several bases and under two different
15 scenarios. As shown, without exception cost of equity estimates obtained from the
16 ECAPM exceed those obtained from the CAPM by roughly 30-40 basis points.

17
18 **Q. As a measure of relative risk, is the beta coefficient an indicator of market, or**
19 **systematic, risk?**

20 **A.** Yes, it is.
21
22
23
24

1 **Q. In direct testimony (p. 53, lines 21-23), when discussing decoupling Dr. Villadsen**
2 **states that “finance theory holds that only systematic (or non-diversifiable) risk**
3 **affects the cost of equity.” In your judgment, does the upward adjustment to beta**
4 **in the ECAPM artificially inflate systematic risk for each of Dr. Villadsen’s sample**
5 **companies?**

6 A. Yes, it does. In accordance with financial theory, investors need to be compensated for
7 exposure to systematic risk, as measured by beta, but because the ECAPM artificially
8 inflates the beta coefficient, utility rates established based upon cost of equity estimates
9 derived from the ECAPM serve to overcompensate investors for systematic risk exposure.

10
11 **Q. For the reasons discussed earlier, it is RUCO’s position that the CAPM cost of**
12 **equity estimates presented in Figure 12 (p. 39) of Dr. Villadsen’s direct testimony**
13 **are overstated, correct?**

14 A. Yes, which further underscores the point that estimates obtained from the ECAPM in Dr.
15 Villadsen’s analyses significantly overstate her recommended 10.5 percent cost of equity
16 for APS in this proceeding.

17
18 **Q. In direct testimony (p. 39), Dr. Villadsen asserts that the ECAPM results presented**
19 **in Figure 12 “deserve higher weight for a range of 10.3% to 10.5%,” than do the**
20 **results obtained from the CAPM. How does RUCO respond?**

21 A. For the reasons noted above, RUCO believes that no weight should be given to Dr.
22 Villadsen’s ECAPM cost of equity results.

1 **Q. Moving on to a discussion of Dr. Villadsen's DCF analyses, in direct testimony (p.**
2 **42, lines 9-11) she states that because utility stock prices are higher, "the dividend**
3 **yield underestimates the yield on cash distributions to investors." Would you care**
4 **to respond to this statement?**

5 A. Yes, I would. Among the various cost of equity estimation models, the DCF is the only
6 one which intrinsically gives consideration to the price investors are willing to pay for a
7 given unit of return. To the extent investors are willing to bid up the share price of utility
8 stocks, they do so with the expectation that the cash distribution in the form of common
9 stock dividends—rather than being underestimated or insufficient—is adequate and
10 sufficient for their investment purposes.

11
12 **Q. As previously discussed, RUCO provided evidence to refute Dr. Villadsen's**
13 **assertion concerning a widening of the yield spread between utility bonds and**
14 **government bonds. To your knowledge, did Dr. Villadsen give consideration to this**
15 **fictitious increased yield spread in her DCF analyses?**

16 A. Yes, she did. When summarizing the results of her cost of equity analyses, in direct
17 testimony (p. 48, lines 12-13) Dr. Villadsen states, "I note that in considering the impact
18 of interest rates on the DCF estimates, I rely on the current widening of the spread
19 between utility and government bonds of 80 basis points." (emphasis added)

20
21 **Q. Among the cost of equity estimates obtained from Dr. Villadsen's analyses, from**
22 **which model does she obtain the highest cost of equity estimate(s)?**

23 A. As shown in Figure 15: "Range of ROE Estimates," on page 48 of her direct testimony,
24 Dr. Villadsen obtains the highest cost of equity estimates from the "DCF Considering

Interest Rates" model for her nuclear subsample proxy group, which fell in the range of 10.8% - 10.9% (i.e., midpoint of 10.85%).

Q. Does Dr. Villadsen obtain estimates from a DCF model which does not consider the impact of a so-called 'current widening yield spread' on interest rates, and if so, how does it compare to the above referenced 10.85% midpoint value?

A. Yes, she does. As shown in Figure 15 (p. 48), Dr. Villadsen obtains a 10.4% cost of equity estimate from her "Simple DCF" model for her nuclear subsample. Thus, it would appear that by giving consideration to the effect of a so-called widening yield curve on interest rates, Dr. Villadsen overstates the cost of equity estimate obtained in her DCF analyses for her nuclear subsample proxy group by 45 basis points ($10.85\% - 10.40\% = 0.45\%$). It should further be noted that a comparison between the results obtained from these same two DCF models for Dr. Villadsen's full sample reveals a similar 45 basis point overstatement to the DCF derived cost of equity, as the range of estimates obtained from the "DCF Considering Interest Rates" model is 10.3% - 10.4% (i.e., midpoint of 10.35%), while the estimate obtained from the "Simple DCF" for the full sample is 9.9% ($10.35\% - 9.9\% = 0.45\%$).

Q. In direct testimony, does Dr. Villadsen indicate what she considers to be a "reasonable range for the sample?"

A. Yes, she does. Based upon the data presented in Figure 15, page 48, of her direct testimony, Dr. Villadsen states that "I consider a **reasonable range for the sample** to be 10.0% to 10.8% (excluding the highest and lowest estimate)."

1 **Q. Given that Dr. Villadsen has designated 10.8% to be the upper bound on her**
2 **'reasonable range for the sample,' and after excluding the highest and lowest**
3 **estimates from consideration, does this mean that the 10.8% estimate obtained**
4 **from her "DCF Considering Interest Rates" for the nuclear sample represents the**
5 **upper bound of Dr. Villadsen's reasonable range?**

6 A. Yes, that would appear to be the case, for by excluding the 10.9% estimate obtained from
7 the "DCF Considering Interest Rates" model for the nuclear sample, that would leave the
8 10.8% estimate obtained from the same model for the nuclear subsample as the highest
9 remaining estimate obtained from Dr. Villadsen's cost of equity analyses. As noted above,
10 this 10.8% - 10.9% range of estimates was overstated by 45 basis points.

11
12 **Q. Based upon RUCO's determination that the 10.8% estimate obtained from Dr.**
13 **Villadsen's "DCF Considering Interest Rates" model for the nuclear subsample is**
14 **overstated, what are the implications of this finding given that Dr. Villadsen relies**
15 **upon this 10.8% estimate as the upper bound of her reasonable range?**

16 A. I believe that it would warrant a reduction being made to the upper bound of Dr. Villadsen's
17 reasonable range.

18
19 **Q. Do you have any other general observations regarding Dr. Villadsen's cost of equity**
20 **analyses?**

21 A. Yes, but only to point out that for purposes of estimating the dividend growth (g) rate in
22 her DCF analyses, Dr. Villadsen relies exclusively on analysts' forecasts of EPS growth.
23 However, as discussed earlier, for purposes of estimating the MRP component in her
24 CAPM and risk premium analyses, she relies exclusively on historical measures of the

MRP going back to the year 1926. That Dr. Villadsen fails to incorporate both historical as well as projected metrics into each of her cost of equity models is a significant weakness in her overall cost of equity analyses.

Q. In direct testimony (pp. 50-51), Dr. Villadsen raises the issue of APS having asymmetric risk exposure, and recommends that (i) the barriers to earning the allowed ROE be removed, if possible, and (ii) if not possible, that it may be necessary to provide APS with a cushion to ensure it earns its allowed ROE. How does RUCO respond to Dr. Villadsen's two recommendations?

A. First, as a regulated public utility APS is afforded an opportunity to earn its authorized ROE, not a guarantee that it will do so. In light of this fact, RUCO objects to the two recommendations proposed by Dr. Villadsen. Second, a review of the most recent (i.e., October 28, 2016) *Value Line* quarterly update for Pinnacle West Corporation (PWC), the parent of APS, reports PWC to have a Financial Strength ranking of A+ and a Safety ranking of 1. A review of the *Value Line* quarterly updates for Dr. Villadsen's sample companies reveals that only two—Con Edison and Xcel Energy—have the same A+ Financial Strength ranking, and only one company—Public Service Enterprise Group—has a higher Financial Strength ranking, A++. Among these same sample companies, only 4 have a Safety ranking of 1 (Con Edison, MGE Energy, Public Service Enterprise Group, and Xcel Energy). Thus, based on this evidence PWC, APS' parent company, appears to be among the financially strongest and safest companies within both Dr. Villadsen's (i) full electric proxy group, and (ii) nuclear subsample, as only PWC and Public Service Enterprise Group are included in both proxy groups. Third, in order to capture any nuclear related risks, like the Company RUCO obtained estimates from both an

1 electric sample and a nuclear subsample. RUCO found that cost of equity estimates
2 obtained for its nuclear subsample exceeded those for its larger electric sample.
3 Accordingly, for purposes of its recommended 9.42 percent cost of equity in this
4 proceeding, without exception RUCO concluded the highest cost estimates obtained from
5 its CAPM, DCF and CE analyses for the nuclear subsample were the appropriate cost
6 rates to be recommended for APS. In light of this fact, the recommendations proposed
7 by Dr. Villadsen should be denied.

8
9 **Q. In direct testimony (pp. 51-52), as one consideration for APS being allowed a**
10 **10.50% ROE, Dr. Villadsen raises the issue of the Company's "smaller size." Does**
11 **RUCO believe APS' size to be a relevant consideration when establishing rates in**
12 **this docket?**

13 **A.** For the reasons noted above, no. Furthermore, as mentioned earlier in my direct
14 testimony, PWC, the parent of APS, is included in the S&P 500, and this fact alone should
15 preclude consideration of a small size adjustment for APS. However, in the event the
16 Commission should give consideration to APS' size, empirical research has demonstrated
17 that a small company risk premium adjustment to the cost of equity is unwarranted for
18 regulated utilities. Annie Wong, of Western Connecticut State University, conducted a
19 study on utility stocks to determine if the so-called size effect exists in the utility industry,
20 and she writes as follows:

21 The fact that the two samples show different, though weak, results
22 indicates that utility and industrial stocks do not share the same
23 characteristics. First, given firm size, utility stocks are consistently less
24 risky than industrial stocks. Second, industrial betas tend to decrease with
firm size but utility betas do not. These findings may be attributed to the
fact that all public utilities operate in an environment with regional
monopolistic power and regulated financial structure. As a result, the

1 business and financial risks are very similar among the utilities regardless
2 of their size. Therefore, utility betas would not necessarily be expected to
be related to firm size.

3 The object of this study is to examine if the size effect exists in the utility
4 industry. After controlling for equity values, there is some weak evidence
5 that firm size is a missing factor from the CAPM for the industrial but not
6 for the utility stocks. This implies that although the size phenomenon has
been strongly documented for industrials, the findings suggest that **there
is no need to adjust for the firm size in utility regulations.**⁸⁹ (emphasis
added)

7
8 **Q. Has the Commission previously ruled on the issue of firm size and whether it
warrants a risk premium adjustment to the cost of equity?**

9
10 A. Yes. In Decision No. 64282,⁹⁰ the Commission ruled in a prior Arizona Water case that
11 firm size does not warrant recognition of a risk premium stating, "We do not agree with
12 the Company's proposal to assign a risk premium to Arizona Water based on its size
13 relative to other publicly traded water utilities...." The Commission confirmed its previous
14 ruling in Decision No. 64727⁹¹ for Black Mountain Gas agreeing with Staff that "the 'firm
15 size phenomenon' does not exist for regulated utilities, and that therefore there is no need
16 to adjust for risk for small firm size in utility regulation." All companies have firm-specific
17 risks; therefore, the existence of unique risks for a company does not lead to the
18 conclusion that its total risk is greater than other entities. Moreover, as previously
19 discussed, investors cannot expect compensation for firm-specific risk since it can be
20 eliminated through diversification.

21
22
23 ⁸⁹ Annie Wong, "Utility Stock and the Size Effect: An Empirical Analysis," *Journal of the Midwest Finance
Association*, (1993), p.98.

24 ⁹⁰ Dated December 28, 2001.

⁹¹ Dated April 17, 2002.

1 **Q. Has the Commission issued a more recent decision which reconfirms its prior**
2 **position regarding firm size?**

3 A. Yes, in a recent EPCOR Water Arizona case in which Ms. Pauline Ahern appeared as the
4 cost of capital witness on behalf of the applicant.⁹² Specifically, in Decision No. 75268⁹³
5 the Commission ruled as follows:

6 **Nor are we persuaded by Ms. Ahern's claim that EPCOR's "size"**
7 **should be recognized as a business risk factor.** Although a company's
8 size may sometimes be considered as a business risk factor, **for utilities**
9 **of substantial size (i.e., those that have access to the equity capital**
10 **markets) it is a minimal consideration in determining business risk.**
11 Small utilities, (e.g., non-class A utilities) may have additional risk due to
12 the inability to hire employees or contract for sufficient levels of expertise
13 management, technical & financial) to perform effectively and efficiently.
14 Small utilities also have other risks such as information access, greater
15 annual variability in operating expenses, and greater regulatory risk both
16 due to lack of skilled rate case personnel and the percentage of operating
17 expenses and rate base components reviewed by Staff and intervenors.
18 Due to the latter two reasons, for any adopted return on equity the
19 distribution of actual returns is greater for a small utility than for a large
20 utility, and greater variability means greater risk. However, most of the
21 proxy companies used in the cost of capital analyses, including EPCOR,
22 are a conglomeration of many smaller water systems and have the
23 capacity to attract the appropriate level of talent for proficient operation.
24 Thus, the business risk for any of the EPCOR systems parallels that of the
sample companies, and **we do not believe a cost of equity adjustment**
for size is appropriate. (emphasis added)

17 **XI. FAIR VALUE RATE OF RETURN**

18 **Q. What cost rate does APS propose be applied to the fair value increment of the**
19 **Company's FVRB in this proceeding?**

20 A. APS proposes that a 1.00 percent cost rate be applied to the fair value increment of the
21 Company's FVRB.
22

23
24 ⁹² EPCOR Water Arizona, Inc. (Docket No. WS-01303A-14-0010).

⁹³ Dated September 8, 2015.

Q. What cost rate does RUCO recommend be applied to the fair value increment of APS' FVRB in this proceeding?

A. As shown in Schedule JAC-1 (Page 2 of 2), for purposes of its recommendation RUCO adopts the Company's proposed 1.00 percent fair value increment cost rate.

Q. What FVROR does APS propose in this proceeding?

A. The Company proposes a FVROR of 5.84 percent.

Q. What FVROR does RUCO recommend for APS in this proceeding?

A. As shown in Schedule JAC-1 (Page 2 of 2), RUCO recommends a FVROR for the Company of 5.36 percent.

Q. In arriving at its recommended 5.36 percent FVROR for the Company, does RUCO employ the same methodology as that used by APS?

A. Yes, it does. The details of RUCO's FVROR calculation are presented in Schedule JAC-1 (Page 2 of 2).

XII. CONCLUSION AND RECOMMENDATIONS

Q. Please summarize RUCO's cost of capital recommendations in this proceeding.

A. RUCO recommends that the Commission adopt the following:

- 1) A capital structure composed of 44.20 percent long-term debt, and 55.80 percent common equity;
- 2) A 5.13 percent cost of long-term debt;
- 3) A cost of common equity of 9.42 percent;

- 4) An overall rate of return of 7.53 percent;
- 5) A 1.00 percent fair value cost rate; and
- 6) A fair value rate of return of 5.36 percent.

Q. Does this conclude your direct testimony?

A. Yes, it does.

ATTACHMENT 1

John A. Cassidy, CRRA

EDUCATION

Arizona State University -- Master of Business Administration-Finance	(May 1987)
University of Arizona -- Master of Library Science	(August 1980)
Arizona State University -- B.A. History, Latin American Studies	(May 1976)

EXPERIENCE

Public Utilities Analyst V -- Residential Utility Consumer Office (RUCO), Phoenix, AZ	(July 2015-Present)
Public Utilities Analyst III -- Arizona Corporation Commission, Phoenix, AZ	(March 2013-July 2015)
Public Utilities Analyst II -- Arizona Corporation Commission, Phoenix, AZ	(May 2012-March 2013)
Public Utility Consultant -- Arizona Corporation Commission, Phoenix, AZ	(Jan. 2012-May 2012)
Regulatory Utility Consultant -- Self-Employed, Tempe, AZ	(2009-2010)
<ul style="list-style-type: none">Assisted in the preparation of testimony filed by the Residential Utility Consumer Office (RUCO) in the Litchfield Park W/WW rate case (Docket No. SW-01428A-09-0103, et al)	
Regulatory Utility Consultant -- Self-Employed, Tempe, AZ	(2007-2008)
<ul style="list-style-type: none">Filed formal cost of capital testimony/schedules on behalf of intervener, Anthem Town Council, and testified at evidentiary hearing in the Arizona-American Water Co., Anthem Water and Anthem/Agua Fria WW rate case (Docket No. WS-01303A-06-0403)	
Utilities Auditor II -- Arizona Corporation Commission, Phoenix, AZ	(Aug. 1993-Nov. 1997)

PROFESSIONAL DEVELOPMENT

Certified Rate of Return Analyst (CRRA)	(May 2016)
Annual Regulatory Studies Program ("Camp NARUC"), Institute of Public Utilities, Michigan State University, East Lansing, MI	(August 4-15, 2014)
45 th and 48 th Financial Forums, Society of Utility and Regulatory Financial Analysts (SURFA), Indianapolis, IN	(April 17-19, 2013 and April 28-29, 2016)
NARUC Utility Rate School, San Diego, CA	(May 13-17, 2013)

HONORS

CPA Candidate - Passed the CPA exam (1997), but opted not to pursue certification

Beta Gamma Sigma - National Honor Society in Business Administration

Rate Dockets Testified - Cost of Capital:

Arizona Public Service Company	Docket No. E-01345A-16-0036
EPCOR Water Arizona	Docket No. WS-01303A-16-0145
Southwest Gas Corporation	Docket No. G-01551A-16-0107
Liberty Utilities (Bella Vista W / Rio Rico W/WW)	Docket Nos. W-02465A-15-0367, et al.
Arizona Water Company	Docket No. W-01445A-15-0277
Liberty Utilities (Black Mountain Sewer)	Docket Nos. SW-02361A-15-0206, et al.
Quail Creek Water Company	Docket No. W-02514A-14-0343
EPCOR Water Arizona	Docket No. WS-01303A-14-0010
Utility Source, L.L.C.	Docket No. WS-04235A-13-0331
Verde Santa Fe Wastewater Company	Docket No. SW-03437A-13-0292
Chaparral City Water Company	Docket No. W-02113A-13-0118
Payson Water Company	Docket No. W-03514A-13-0111
Lago Del Oro Water Company	Docket No. W-01944A-13-0215
Las Quintas Serenas Water Company	Docket No. W-01583A-13-0117
Litchfield Park Service Company	Docket Nos. SW-01428A-13-0042, et al.
Adaman Mutual Water Company	Docket No. W-01997A-12-0501
Global Water Utilities	Docket Nos. W-01212A-12-0309, et al.
New River Utility Company	Docket No. W-01737A-12-0478
Arizona Water Company	Docket No. W-01445A-12-0348
Far West Water & Sewer, Inc.	Docket No. WS-03478A-12-0307
Cordes Lakes Water Company	Docket No. W-02060A-12-0356
Rio Rico Utilities, Inc.	Docket No. WS-02676A-12-0196
Ray Water Company	Docket No. W-01380A-12-0254
Vail Water Company	Docket No. W-01651B-12-0339
Valley Water Company	Docket No. W-01412A-12-0195
Arizona Water Company	Docket No. W-01445A-11-0310
Pima Utility Company	Docket Nos. W-02199A-11-0329, et al.

Rate Dockets Testified - Revenue Requirement/Rate Design:

Arizona Water Company	Docket No. W-01445A-15-0277
Quail Creek Water Company	Docket No. W-02514A-14-0343
Beaver Dam Water Company	Docket No. W-03067A-12-0232
Eden Water Company	Docket No. W-02068A-11-0471
Great Prairie Oasis, dba Sunland Water Co.	Docket No. W-04015A-12-0051

Financing Dockets - Responsible for ACC Staff Report:

Arizona Public Service Company	Docket No. E-01345A-11-0423
Tucson Electric Power Company	Docket No. E-01933A-12-0176
Chaparral City Water Company	Docket No. W-02113A-13-0047
Payson Water Company	Docket No. W-03514A-13-0142
Lago Del Oro Water Company	Docket No. W-01944A-13-0242
Duncan Valley Electric Cooperative, Inc.	Docket No. E-01703A-13-0272
Sulphur Springs Valley Electric Cooperative, Inc.	Docket No. E-01575A-12-0457
Trico Electric Cooperative, Inc.	Docket No. E-01461A-12-0056
Great Prairie Oasis, dba Sunland Water Co.	Docket No. W-04015A-12-0050
Columbus Electric Cooperative, Inc.	Docket No. E-01851A-11-0415
Pima Utility Company	Docket Nos. W-02199A-11-0403, et al.

ATTACHMENT 2

ALLETE NYSE-ALE				RECENT PRICE	61.33	P/E RATIO	19.3	Trailing: 17.6 Median: 16.0	RELATIVE P/E RATIO	1.02	DIV'D YLD	3.5%	VALUE LINE		
TIMELINESS	3	Lowered 9/16/16	High: 51.7 Low: 35.7	49.3 42.6	51.3 38.2	49.0 28.3	35.3 23.3	37.9 30.0	42.5 35.1	42.7 37.7	54.1 41.4	58.0 44.2	59.7 45.3	65.4 48.3	Target Price Range 2019 2020 2021
SAFETY	2	New 10/1/04	LEGENDS 0.75 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession												
TECHNICAL	1	Raised 8/19/16	2019-21 PROJECTIONS Price Gain Ann'l Total High 65 (+5%) 5% Low 50 (-20%) -1%												
BETA	.75	(1.00 = Market)	Insider Decisions N D J F M A M J J to Buy 0 0 0 0 0 0 0 0 Options 0 0 7 0 1 0 0 8 to Sell 0 0 0 0 1 0 1 0												
Institutional Decisions			% TOT. RETURN 8/16 THIS STOCK VL ADJUSTED INDEX 1 yr. 28.8 10.9 3 yr. 41.1 29.8 5 yr. 85.8 84.5												
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017			© VALUE LINE PUB. LLC 19-21												
-- -- -- -- 25.30 24.50 25.23 27.33 24.57 21.57 25.34 24.75 24.40 24.60 24.77 30.27 26.90 27.95			Revenues per sh 30.50												
-- -- -- -- 2.97 3.85 4.14 4.42 4.23 3.57 4.35 4.91 5.01 5.35 5.68 6.79 6.80 7.15			"Cash Flow" per sh 8.25												
-- -- -- -- 1.35 2.48 2.77 3.08 2.82 1.89 2.19 2.65 2.58 2.63 2.90 3.38 3.15 3.30			Earnings per sh A 3.75												
-- -- -- -- .30 1.25 1.45 1.64 1.72 1.76 1.76 1.78 1.84 1.90 1.96 2.02 2.08 2.14			Div'd Decl'd per sh B + 2.40												
-- -- -- -- 2.12 1.95 3.37 6.82 9.24 9.05 6.95 6.38 10.30 7.93 12.48 5.84 3.95 5.65			Cap'l Spending per sh 3.50												
-- -- -- -- 21.23 20.03 21.90 24.11 25.37 26.41 27.26 28.78 30.48 32.44 35.06 37.07 38.20 39.50			Book Value per sh C 43.50												
-- -- -- -- 29.70 30.10 30.40 30.80 32.60 35.20 35.80 37.50 39.40 41.40 45.90 49.10 49.40 49.70			Common Shs Outst'g D 50.60												
-- -- -- -- 25.2 17.9 16.5 14.8 13.9 16.1 16.0 14.7 15.9 18.6 17.2 15.1			Avg Ann'l P/E Ratio 15.0												
-- -- -- -- 1.33 .95 .89 .79 .84 1.07 1.02 .92 1.01 1.05 .91			Relative P/E Ratio .95												
-- -- -- -- .9% 2.8% 3.2% 3.6% 4.4% 5.8% 5.0% 4.6% 4.5% 3.9% 3.9% 4.0%			Avg Ann'l Div'd Yield 4.2%												
CAPITAL STRUCTURE as of 6/30/16			767.1 841.7 801.0 759.1 907.0 928.2 961.2 1018.4 1136.8 1486.4 1330 1390												
Total Debt \$1564.3 mill. Due in 5 Yrs \$390.1 mill.			77.3 87.6 82.5 61.0 75.3 93.8 97.1 104.7 124.8 163.4 155 165												
LT Debt \$1498.9 mill. LT Interest \$63.5 mill.			37.5% 34.8% 34.3% 33.7% 37.2% 27.6% 28.1% 21.5% 22.6% 19.4% 16.0% 20.0%												
(LT interest earned: 4.1x)			1.4% 6.6% 5.8% 12.8% 8.9% 2.7% 5.3% 4.4% 6.3% 2.0% 2.0%												
Leases, Uncapitalized Annual rentals \$14.0 mill.			35.1% 35.6% 41.6% 42.8% 44.2% 44.3% 43.7% 44.6% 44.2% 46.3% 45.5% 45.0%												
Pension Assets-12/15 \$521.3 mill.			64.9% 64.4% 58.4% 57.2% 55.8% 55.7% 56.3% 55.4% 55.8% 53.7% 54.5% 55.0%												
Oblig \$709.8 mill.			1025.6 1153.5 1415.4 1625.3 1747.6 1937.2 2134.6 2425.9 2882.2 3388.9 3455 3580												
Pfd Stock None			921.6 1104.5 1387.3 1622.7 1805.6 1982.7 2347.6 2576.5 3286.4 3669.1 3685 3775												
Common Stock 49,379,945 shs.			8.6% 8.6% 6.7% 4.8% 5.4% 6.0% 5.6% 5.3% 5.2% 5.8% 5.5% 5.5%												
MARKET CAP: \$3.0 billion (Mid Cap)			11.6% 11.8% 10.0% 6.6% 7.7% 8.7% 8.1% 7.8% 7.8% 9.0% 8.0% 8.5%												
ELECTRIC OPERATING STATISTICS			11.6% 11.8% 10.0% 6.6% 7.7% 8.7% 8.1% 7.8% 7.8% 9.0% 8.0% 8.5%												
2013 2014 2015			5.0% 5.8% 3.9% .5% 1.5% 2.9% 2.3% 2.2% 2.5% 3.6% 3.0% 3.0%												
% Change Retail Sales (KWH)			57% 51% 61% 93% 81% 66% 71% 72% 67% 60% 66% 64%												
Avg. Indust. Use (MWH)			NA NA NA												
Avg. Indust. Revs. per KWH (\$)			5.45 6.09 6.40												
Capacity at Peak (MW)			1793 1985 1942												
Peak Load, Winter (MW) F			1646 1637 1631												
Annual Load Factor (%)			NA NA NA												
% Change Customers (avg.)			NA NA NA												
Fixed Charge Cov. (%)			306 345 381												
ANNUAL RATES			Past 10 Yrs. Past 5 Yrs. Est'd '13-'15												
of change (per sh)			Revenues 5.5% 2.0% 2.5%												
"Cash Flow"			5.5% 8.0% 5.5%												
Earnings			4.5% 5.0% 4.0%												
Dividends			9.5% 2.5% 3.5%												
Book Value			5.5% 6.0% 4.0%												
QUARTERLY REVENUES (\$ mill.)			Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year												
2013 2014 2015 2016 2017			263.8 235.6 251.0 268.0 1018.4												
2013 2014 2015 2016 2017			296.5 260.7 288.9 290.7 1136.8												
2013 2014 2015 2016 2017			320.0 323.3 462.5 380.6 1486.4												
2013 2014 2015 2016 2017			333.8 314.8 345 336.4 1330												
2013 2014 2015 2016 2017			350 330 360 350 1390												
EARNINGS PER SHARE A			Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year												
2013 2014 2015 2016 2017			.83 .35 .63 .82 2.63												
2013 2014 2015 2016 2017			.80 .40 .97 .73 2.90												
2013 2014 2015 2016 2017			.85 .46 1.23 .83 3.38												
2013 2014 2015 2016 2017			.93 .50 .97 .75 3.15												
2013 2014 2015 2016 2017			.95 .50 1.05 .80 3.30												
QUARTERLY DIVIDENDS PAID B +			Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year												
2012 2013 2014 2015 2016			.46 .46 .46 .46 1.84												
2012 2013 2014 2015 2016			.475 .475 .475 .475 1.90												
2012 2013 2014 2015 2016			.49 .49 .49 .49 1.96												
2012 2013 2014 2015 2016			.505 .505 .505 .505 2.02												
2012 2013 2014 2015 2016			.52 .52 .52 .52												

to Buy 0 0 0 0 0 0 0 0
Options 0 0 7 0 1 0 0 8
to Sell 0 0 0 0 1 0 1 0

Percent shares traded
15
10
5

REVENUES PER SHARE
30.50
8.25
3.75
2.40
3.50
43.50
50.60
15.0
.95
4.2%

CASH FLOW PER SHARE
8.25
3.75
2.40
3.50
43.50
50.60
15.0
.95
4.2%

BOOK VALUE PER SHARE
43.50
50.60
15.0
.95
4.2%

COMMON STOCK OUTSTANDING
50.60
15.0
.95
4.2%

MARKET CAP: \$3.0 billion (Mid Cap)

ELECTRIC OPERATING STATISTICS

2013 2014 2015

% Change Retail Sales (KWH) -1.1 +5 -8.9

Avg. Indust. Use (MWH) NA NA NA

Avg. Indust. Revs. per KWH (\$) 5.45 6.09 6.40

Capacity at Peak (MW) 1793 1985 1942

Peak Load, Winter (MW) F 1646 1637 1631

Annual Load Factor (%) NA NA NA

% Change Customers (avg.) NA NA NA

Fixed Charge Cov. (%) 306 345 381

ANNUAL RATES

Past 10 Yrs. Past 5 Yrs. Est'd '13-'15

of change (per sh)

Revenues 5.5% 2.0% 2.5%

"Cash Flow" 5.5% 8.0% 5.5%

Earnings 4.5% 5.0% 4.0%

Dividends 9.5% 2.5% 3.5%

Book Value 5.5% 6.0% 4.0%

QUARTERLY REVENUES (\$ mill.)

Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year

2013 263.8 235.6 251.0 268.0 1018.4

2014 296.5 260.7 288.9 290.7 1136.8

2015 320.0 323.3 462.5 380.6 1486.4

2016 333.8 314.8 345 336.4 1330

2017 350 330 360 350 1390

EARNINGS PER SHARE A

Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year

2013 .83 .35 .63 .82 2.63

2014 .80 .40 .97 .73 2.90

2015 .85 .46 1.23 .83 3.38

2016 .93 .50 .97 .75 3.15

2017 .95 .50 1.05 .80 3.30

QUARTERLY DIVIDENDS PAID B +

Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year

2012 .46 .46 .46 .46 1.84

2013 .475 .475 .475 .475 1.90

2014 .49 .49 .49 .49 1.96

2015 .505 .505 .505 .505 2.02

2016 .52 .52 .52 .52

(A) Diluted EPS. Excl. nonrec. losses: '04, 25¢ net; '05, \$1.84; '15, 46¢; gain (losses) on disc. ops.: '04, \$2.57, '05, (16¢), '06, (2¢). '15 EPS don't add due to rounding. Next earnings report due early Nov. (B) Div'ds historically paid in early Mar., June, Sept. and Dec. (C) Div'd reinvestment plan avail. + Shareholder investment plan avail. (C) Incl. deferred charges. In '15: \$11.96/sh. (D) In mill. (E) Rate base: Orig. cost deprec. Rate allowed on com. eq. in '10: 10.38%; earned on avg. com. eq., '15: 9.3%. Reg. Clim.: Avg. (F) Summer peak in '13.

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Company's Financial Strength A
Stock's Price Stability 95
Price Growth Persistence 40
Earnings Predictability 90

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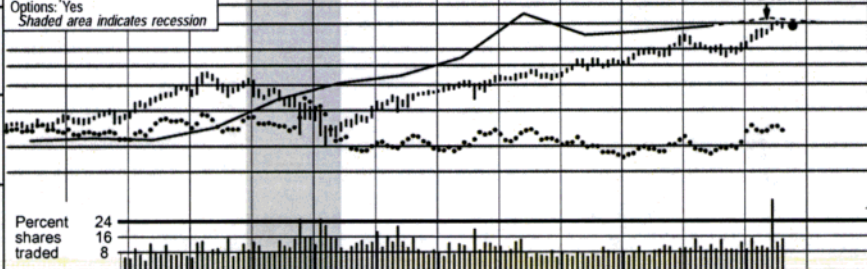
ALLIANT ENERGY NYSE-LNT		RECENT PRICE	38.81	P/E RATIO	19.9 (Trailing: 22.1 Median: 15.0)	RELATIVE P/E RATIO	1.05	DIV'D YLD	3.0%	VALUE LINE
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TIMELINESS 1 Raised 4/22/16	High: 15.3	20.0	23.3	21.2	15.8	18.8	22.2	23.8	27.1	34.9	35.4	41.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Price	Gain	Ann'l Total Return
High 40	(+5%)	4%
Low 30	(-25%)	-2%

Insider Decisions	N	D	J	F	M	A	M	J	J
to Buy	1	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	1	1	0	0	0	1

Institutional Decisions	4Q2015	1Q2016	2Q2016
to Buy	186	185	421
to Sell	163	174	47
Hld's(000)	144602	150762	149878



% TOT. RETURN 8/16	THE STOCK	VL ARITH' INDEX
1 yr.	38.6	10.9
3 yr.	69.9	29.8
5 yr.	122.5	84.5

Alliant Energy, formerly called Interstate Energy Corporation, was formed on April 21, 1998 through the merger of WPL Holdings, IES Industries, and Interstate Power. WPL stockholders received one share of Interstate Energy stock for each WPL share, IES stockholders received 1.14 Interstate Energy shares for each IES share, and Interstate Power stockholders received 1.11 Interstate Energy shares for each Interstate Power share.

CAPITAL STRUCTURE as of 6/30/16
Total Debt \$3902.7 mill. Due in 5 Yrs \$1100.0 mill.
LT Debt \$3588.7 mill. LT Interest \$175.0 mill.
(LT interest earned: 3.6x)

Pension Assets-12/15 \$895.0 mill. **Oblig.** \$1206.3 mill.
Pfd Stock \$400.0 mill. **Pfd Div'd** \$10.2 mill.
16,000,000 shs.

Common Stock 226,918,432 shs.
Adjusted for 2-for-1 split 4/20/16

MARKET CAP: \$8.8 billion (Large Cap)

ELECTRIC OPERATING STATISTICS	2013	2014	2015
% Change Retail Sales (KWH)	+1	+1	-1
Avg. Indust. Use (MWH)	11471	11821	11735
Avg. Indust. Revs. per KWH (\$)	6.75	6.85	6.92
Capacity at Peak (Mw)	5820	5426	5385
Peak Load, Summer (Mw)	5820	5426	5385
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+4	+4	+3

Fixed Charge Cov. (%)	295	320	325
-----------------------	-----	-----	-----

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.0%	-1.5%	4.0%
"Cash Flow"	3.5%	8.0%	6.0%
Earnings	6.0%	7.0%	6.0%
Dividends	7.0%	6.5%	4.5%
Book Value	4.0%	4.0%	4.0%

Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	859.6	718.0	866.6	832.6	3276.8
2014	952.8	750.3	843.1	804.1	3350.3
2015	897.4	717.2	898.9	740.1	3253.6
2016	843.8	754.2	930	852	3380
2017	885	780	975	910	3550

2017	885	780	975	970	3530
Cal-endar	EARNINGS PER SHARE ^				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.36	.30	.72	.27	1.65
2014	.49	.28	.70	.27	1.74
2015	.44	.30	.80	.15	1.69
2016	.43	.37	.90	.20	1.90
2017	.48	.30	.90	.32	2.00

Cal-endar	QUARTERLY DIVIDENDS PAID ^B [†]				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.225	.225	.225	.225	.90
2013	.235	.235	.235	.235	.94
2014	.255	.255	.255	.255	1.02
2015	.275	.275	.275	.275	1.10
2016	.295	.295	.295	.295	1.18

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	VALUE LINE PUB. LLC	19-21
14.46	15.57	16.67	15.51	15.40	16.51	13.94	14.77	15.10	14.34	14.70	15.45	Revenues per sh	17.85
2.16	2.56	2.28	2.10	2.60	2.75	2.95	3.34	3.44	3.45	3.75	4.00	"Cash Flow" per sh	4.95
1.03	1.35	1.27	.95	1.38	1.38	1.53	1.65	1.74	1.69	1.90	2.00	Earnings per sh A	2.45
.58	.64	.70	.75	.79	.85	.90	.94	1.02	1.10	1.18	1.25	Div'd Decl'd per sh B+†	1.50
1.71	2.46	3.98	5.43	3.91	3.03	5.22	3.32	3.78	4.25	4.50	4.85	Cap'l Spending per sh	5.65
11.42	12.15	12.78	12.54	13.05	13.57	14.12	14.79	15.54	16.41	18.05	18.75	Book Value per sh C	20.00
232.25	220.72	220.90	221.31	221.79	222.04	221.97	221.89	221.87	226.92	230.00	230.00	Common Shs Outst'g D	230.00
16.8	15.1	13.4	13.9	12.5	14.5	14.5	15.3	16.6	18.1	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	15.0
.91	.80	.81	.93	.80	.91	.92	.86	.87	.92			Relative P/E Ratio	.95
3.3%	3.1%	4.1%	5.7%	4.6%	4.3%	4.1%	3.7%	3.5%	3.6%			Avg Ann'l Div'd Yield	4.1%
3359.4	3437.6	3681.7	3432.8	3416.1	3665.3	3094.5	3276.8	3350.3	3253.6	3380	3550	Revenues (\$mill)	4100
260.1	320.8	280.0	208.6	303.9	304.4	337.8	382.1	385.5	380.7	435	460	Net Profit (\$mill)	565
43.8%	44.4%	33.4%	--	30.1%	19.0%	21.5%	12.4%	10.1%	15.3%	15.0%	15.0%	Income Tax Rate	15.0%
3.1%	2.4%	--	--	--	--	--	--	6.5%	7.0%	7.0%	7.0%	AFUDC % to Net Profit	7.0%
31.4%	32.4%	36.3%	44.3%	46.3%	45.7%	48.4%	46.1%	49.7%	48.6%	49.5%	49.5%	Long-Term Debt Ratio	49.5%
62.9%	61.9%	58.6%	51.2%	49.5%	50.9%	48.4%	50.8%	47.5%	51.4%	49.5%	49.5%	Common Equity Ratio	49.5%
4218.4	4329.5	4815.6	5423.0	5840.8	5921.2	6476.6	6461.0	7257.2	7246.3	7600	7800	Total Capital (\$mill)	8200
4944.9	4679.9	5353.5	6203.0	6730.6	7037.1	7838.0	7147.3	6442.0	8970.2	8200	8200	Net Plant (\$mill)	8800
7.5%	8.6%	7.0%	5.1%	6.6%	6.4%	6.3%	7.0%	5.3%	5.1%	5.5%	6.0%	Return on Total Cap'l	7.0%
9.0%	11.0%	9.1%	6.9%	9.7%	9.5%	10.1%	11.0%	10.6%	9.7%	10.5%	10.5%	Return on Shr. Equity	12.0%
9.1%	11.3%	9.3%	6.8%	9.9%	9.5%	10.3%	11.3%	10.9%	10.0%	11.0%	11.0%	Return on Com Equity E	12.5%
4.0%	5.9%	3.8%	.9%	3.8%	3.3%	3.9%	4.9%	4.3%	3.4%	4.0%	4.5%	Retained to Com Eq	5.5%
59%	50%	62%	88%	64%	67%	64%	57%	59%	65%	62%	63%	All Div'ds to Net Prof	61%

BUSINESS: Alliant Energy Corp., formerly named Interstate Energy, is a holding company formed through the merger of WPL Holdings, IES Industries, and Interstate Power. Supplies electricity, gas, and other services in Wisconsin, Iowa, and Minnesota. Elect. revs. by state: WI, 44%; IA, 55%; MN, 1%. Elect. rev.: residential, 39%; commercial, 24%; industrial, 30%; wholesale, 6%; other, 1%. Fuel

sources, 2015: coal, 46%; gas, 19%; other, 35%. Fuel costs: 49% of revs. 2015 depreciation rate: 5.7%. Estimated plant age: 13 years. Has 4,070 employees. Chairman & Chief Executive Officer: Patricia L. Kampling. Incorporated: Wisconsin. Address: 4902 N. Biltmore Lane, Madison, Wisconsin 53718. Telephone: 608-458-3311. Internet: www.alliantenergy.com.

Alliant Energy reported better-than-expected second-quarter results. The company posted share net of \$0.37, rising 23% versus the year-earlier figure, and easily topping our \$0.30 estimate. The performance was driven by a large uptick in electric sales to commercial entities, coupled with newly implemented cost-containment initiatives. Given the impressive results, we are increasing our 2016 full-year earnings estimate by a nickel, to \$1.90 a share. That is slightly below the high end of management's share-net guidance of \$1.80 to \$1.95.

Alliant asked the Iowa Utilities Board to approve a \$1 billion plan that would expand its wind energy operations in the state. The new project is part of the company's efforts to reduce carbon emissions and improve its clean energy profile. The \$1 billion would be invested over five years, and add approximately 500 megawatts of wind power to an existing farm in northern Iowa. The utility is requesting an 11.5% return on common equity. If authorized, the project is expected to be completed by 2020.

Management does not anticipate any

changes to its 2016-2019 capital expenditure program. Even with the new wind turbine proposal, it continues to forecast capex of about \$5 billion through 2019. That is because a number of planned projects are coming in below the original forecast, and several others have been shelved or delayed.

The Marshalltown generating station is approximately 85% complete. Total capital expenditures for this project are slated to be about \$700 million. The natural gas-fired facility is expected to go into service in the spring of 2017.

The company is also making progress on the Riverside Energy Center expansion. It recently selected AECOM to perform the engineering, procurement, and construction of the development. The \$700 million investment in Riverside is expected to supply energy to customers by early 2020.

This issue is now ranked 1 (Highest) for Timeliness. However, given the excessive valuation, total return potential over the 3- to 5-year haul is well below the Value Line median.

Daniel Henigson September 16, 2016

(A) Diluted EPS. Excl. nonrecur. gains (losses): '06, 42¢; '07, 55¢; '08, 4¢; '09, (44¢); '10, (8¢); '11, (1¢); '12, (8¢). Next earnings report due early November. (B) Dividends historically paid in mid-Feb., May, Aug., and Nov. ■ Div'd reinvest. plan avail. † Shareholder invest. plan avail. (C) Incl. deferred chgs. In '15: \$95.0 mill., \$0.42/sh. (D) In mill. (E) Rate base: Orig. cost.	Rates all'd on com. eq. in IA in '15: 10.9%; in WI in '15 Regul. Clim.: WI, Above Avg.; IA, Avg.	Company's Financial Strength A Stock's Price Stability 100 Price Growth Persistence 95 Earnings Predictability 85
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2098-2099	2098-2099
2099-2100	

	Price	Gain	Ann'l Total Return
High	75	(+15%)	7%
Low	55	(-15%)	Nil

	N	D	J	F	M	A	M	J	J
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	9	0
to Sell	1	0	0	1	0	0	0	0	0

	4Q2015	1Q2016	2Q2016
to Buy	369	397	389
to Sell	323	329	337
Hld's(000)	339168	351925	339322

	THIS STOCK	VL ARITH. INDEX
1 yr.	23.3	10.9
3 yr.	69.0	29.8
5 yr.	104.7	84.5

CAPITAL STRUCTURE as of 6/30/16	12622	13380	14440	13489	14427	15116	14945	15357	17020	16453	15700	16000	Revenues (\$mill)	17500
Total Debt \$21604 mill. Due in 5 Yrs \$10490 mill.														
LT Debt \$17537 mill. LT interest \$789 mill.	1131.0	1147.0	1208.0	1365.0	1248.0	1513.0	1443.0	1549.0	1634.0	1763.4	1835	1875	Net Profit (\$mill)	2055
Incl. \$1835 mill. securitized bonds. Incl. \$343.5 mill. capitalized leases.	33.0%	31.1%	31.3%	29.7%	34.8%	31.7%	33.9%	36.2%	37.8%	35.1%	36.0%	36.0%	Income Tax Rate	36.0%
(LT interest earned: 3.8x)	9.9%	9.8%	9.9%	10.9%	10.4%	10.6%	11.2%	7.3%	9.0%	11.0%	11.0%	11.0%	AFUDC % to Net Profit	9.0%
Leases, Uncapitalized Annual rentals \$239.1 mill.	56.7%	58.3%	59.1%	54.4%	53.1%	50.7%	50.6%	51.1%	49.0%	49.8%	48.5%	49.5%	Long-Term Debt Ratio	50.0%
Pension Assets-12/15 \$4767.6 mill. Oblig \$4992.9 mill.	43.0%	41.4%	40.7%	45.4%	46.7%	49.3%	49.4%	48.9%	51.0%	50.2%	51.5%	50.5%	Common Equity Ratio	50.0%
Pfd Stock None	21902	24342	26290	28958	29184	29747	30823	32913	33001	35633	36275	38975	Total Capital (\$mill)	44400
	26781	29870	32987	34344	35674	36971	38763	40997	44117	46133	49150	52175	Net Plant (\$mill)	59500
	6.7%	6.3%	6.2%	6.2%	5.7%	6.6%	6.1%	6.0%	6.3%	6.1%	6.5%	6.0%	Return on Total Cap'l	6.0%
Common Stock 491,709,452 shs. as of 7/28/16	11.9%	11.3%	11.2%	10.3%	9.1%	10.3%	9.5%	9.6%	9.7%	9.9%	10.0%	9.5%	Return on Shr. Equity	9.5%
MARKET CAP: \$32 billion (Large Cap)	12.0%	11.4%	11.3%	10.4%	9.1%	10.3%	9.5%	9.6%	9.7%	9.9%	10.0%	10.0%	Return on Com Equity ^E	9.5%
ELECTRIC OPERATING STATISTICS	5.7%	5.1%	5.1%	4.6%	3.1%	4.2%	3.5%	3.7%	3.8%	3.9%	4.0%	4.0%	Retained to Com Eq	3.5%
	53%	55%	55%	56%	66%	60%	63%	62%	61%	60%	61%	63%	All Div'ds to Net Prof	67%

	2013	2014	2015	
% Change Retail Sales (KWH)	-1.5	+1.1	-1.2	BUSINESS: American Electric Power Company, Inc. (AEP),
Avg. Indust. Use (MWH)	NA	NA	NA	through 10 operating utilities, serves 5.4 mill. customers in Arkan-
Avg. Indust. Revs. per KWH (¢)	NA	NA	NA	sas, Kentucky, Indiana, Louisiana, Michigan, Ohio, Oklahoma, Ten-
Capacity at Peak (Mw)	NA	NA	NA	nessee, Texas, Virginia, & West Virginia. Electric rev. breakdown:
Peak Load (Mw)	NA	NA	NA	residential, 40%; commercial, 23%; industrial, 19%; wholesale,
Annual Load Factor (%)	NA	NA	NA	15%; other, 3%. Sold 50% stake in Yorkshire Holdings (British utili-
% Change Customers (y-end)	+4	+3	+3	ty) '01; SEEBOARD (British utility) '02; Houston Pipeline '05; com-
				mercial barge operation in '15. Generating sources not available.
				Fuel costs: 37% of revs. '15 reported deprec. rates (utility): 0.4%-
				11.8%. Has 17,400 employees. Chairman, President & CEO:
				Nicholas K. Akins. Inc. NY: Address: 1 Riverside Plaza, Columbus,
				OH 43215-2373. Tel.: 614-716-1000. Internet: www.aep.com .

Fixed Charge Cov. (%)	326	348	356
ANNUAL RATES	Past	Past	Est'd '13-'15
of change (per sh)	10 Yrs.	5 Yrs.	to '19-'21
Revenues	- 5.5%	1.0%	1.0%
"Cash Flow"	2.5%	3.0%	3.0%
Earnings	2.5%	3.5%	4.0%
Dividends	3.0%	4.0%	5.0%
Book Value	5.0%	5.0%	4.0%

Calendar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	3826	3582	4176	3773	15357
2014	4648	4044	4302	4026	17020
2015	4580	3826	4431	3614	16453
2016	4045	3893	4162	3600	15700
2017	4200	3900	4200	3700	16000

Calendar	EARNINGS PER SHARE ^A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.75	.73	1.10	.60	3.18
2014	1.15	.80	1.01	.38	3.34
2015	1.27	.88	1.04	.40	3.59
2016	1.02	1.07	1.26	.50	3.85
2017	1.25	.95	1.25	.45	3.90

Calendar	QUARTERLY DIVIDENDS PAID ■				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.47	.47	.47	.47	1.88
2013	.47	.49	.49	.50	1.95
2014	.50	.50	.50	.53	2.03
2015	.53	.53	.53	.56	2.15
2016	.56	.56	.56		

American Electric Power is seeking a regulatory restructuring in Ohio. This would not be a return to full regulation, but a way for the company to place some nonregulated generating capacity in the rate base of its utilities in the state. AEP tried to move toward regulation by initiating a purchased-power agreement between its utilities in Ohio and its generating assets that serve the state, but this was overturned by the Federal Energy Regulatory Commission earlier this year. So, the company is making an attempt with the state legislature. Something along these lines will probably be known by yearend. AEP is also preparing to put the plants up for sale in case legislation is not passed.

The company is already selling its other nonregulated generating assets. This is part of AEP's strategy to exit its nonutility activities and become entirely regulated. An announcement of the winning bidder(s) is expected within the next few weeks, with a closing in late 2016 or early 2017. Even without this benefit next year, growth in the company's transmission operations should produce higher profits next year.

We have raised our 2016 earnings estimate by \$0.15 a share, to \$3.85. June-quarter profits were better than expected due to an \$0.11-a-share gain from a federal tax audit settlement. We *include* this in our earnings presentation even though AEP excludes it from its 2016 earnings guidance of \$3.60-\$3.80.

Public Service of Oklahoma is still awaiting a rate order. The utility filed for a rate hike of \$177 million, based on a 10.5% return on a 48% common-equity ratio. Because an order was not received by the start of 2016, it implemented a \$75 million interim tariff hike at that time. The decision might well come by yearend. Note that AEP's Indiana & Michigan subsidiary is preparing to file a rate application in Indiana.

We expect a dividend increase in the fourth quarter. We estimate a boost of \$0.03 a share (5.4%) in the quarterly disbursement. AEP is targeting a payout ratio in a range of 60%-70%.

This timely stock has a dividend yield that is slightly above the utility mean. Total return potential to 2019-2021 is low.

Paul F. Debbas, CFA, September 16, 2016

<p>(A) Dil. EPS. Excl. nonrec. gains (losses): '03, '\$1.92'; '04, '24¢; '05, (62¢); '06, (20¢); '07, (20¢); '08, '04; '10, (7¢); '11, 89¢; '12, (38¢); '13, (14¢); '16, (4¢); discount. ops.: '03, (32¢); '04, 15¢; '05, 7¢; '06, 2¢; '08, 3¢; '15, 58¢; '16, 1¢; '14, '15 EPS don't add due to rounding. Next eps. report due late Oct. (B) Div's histor. paid early Mar., June, Sept., & Dec. ■ Div'd</p>		<p>reinvest. plan avail. (C) Incl. intang. In '15: \$14.86/sh. (D) In mill. (E) Rate base: various. Rates all'd on com. eq.; 9.65%-10.9%; earn. on avg. com. eq.; '15: 10.2%. Regul. Climate: Avg.</p>		<p>Company's Financial Strength A Stock's Price Stability 100 Price Growth Persistence 55 Earnings Predictability 90</p>	
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RECENT PRICE	42.80	P/E RATIO	20.3 (Trailing: 21.9 Median: 16.0)	RELATIVE P/E RATIO	1.07	DIV'D YLD	3.0%	VALUE LINE	
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TIMELINESS	3	Lowered 9/2/10
SAFETY	2	Raised 3/21/14
TECHNICAL	1	Raised 9/9/16
BETA	.65	(1.00 = Market)

High:	16.8	17.0
Low:	9.7	12.1

LEGENDS

— 0.86 x Dividends p sh
divided by Interest Rate

.... Relative Price Strength

Options: Yes

Shaded area indicates recession

2019-21 PROJECTIONS

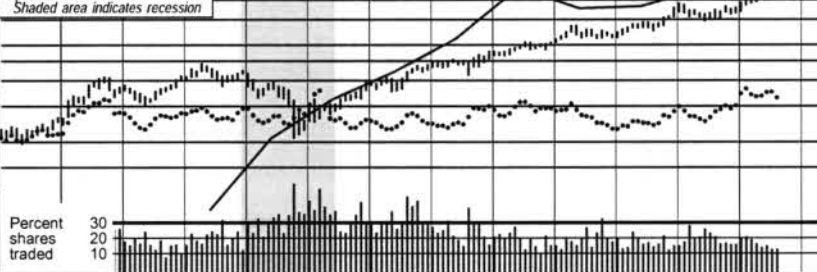
	Price	Gain	Ann'l Total Return
High	45	(+5%)	5%
Low	30	(-30%)	-4%

Insider Decisions

	N	D	J	F	M	A	M	J	J
to Buy	1	0	0	0	1	0	0	0	0
Options	0	0	9	0	0	0	10	0	1
to Sell	2	0	0	1	3	0	4	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	206	233	236
to Sell	193	205	201
Hld's(000)	252257	250368	251054



	THIS STOCK	VL ARITH. INDEX
1 yr.	32.0	10.9
3 yr.	75.0	29.8
5 yr.	155.0	84.5

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21	
74.24	72.16	60.28	34.21	28.06	28.52	30.57	28.95	30.13	27.23	25.77	25.59	23.90	24.68	26.09	23.29	22.15	22.70	Revenues per sh	24.75	
7.61	5.24	d.09	2.39	2.87	3.43	3.22	3.08	3.88	3.47	3.70	3.65	3.82	4.06	4.22	4.59	4.80	5.30	"Cash Flow" per sh	6.50	
2.53	1.27	d2.99	d.29	.74	1.10	.64	.64	1.23	.93	1.33	1.45	1.53	1.66	1.74	1.89	1.95	2.15	Earnings per sh ^A	2.50	
1.46	1.46	1.09	--	--	--	--	.20	.36	.50	.66	.84	.96	1.02	1.08	1.16	1.24	1.32	Div'd Decl'd per sh ^B	1.60	
8.51	9.49	5.18	3.32	2.69	2.69	3.01	5.61	3.50	3.59	3.29	3.47	4.65	4.98	5.73	5.64	6.00	6.20	Cap'l Spending per sh	5.75	
19.48	14.21	7.86	9.84	10.63	10.53	10.03	9.46	10.88	11.42	11.19	11.92	12.09	12.98	13.34	14.21	15.00	16.00	Book Value per sh ^C	19.25	
121.20	132.99	144.10	161.13	195.00	220.50	222.78	225.15	226.41	227.89	249.60	254.10	264.10	266.10	275.20	277.16	280.00	282.00	Common Shs Outst'g ^D	288.00	
9.6	20.8	--	--	12.4	12.6	22.2	26.8	10.9	13.6	12.5	13.6	15.1	16.3	17.3	18.3	Bold figures are Value Line estimates			Avg Ann'l P/E Ratio	15.0
.62	1.07	--	--	.66	.67	1.20	1.42	.66	.91	.80	.85	.96	.92	.91	.93				Relative P/E Ratio	.95
6.0%	5.5%	7.5%	--	--	--	--	1.2%	2.7%	4.0%	4.0%	4.3%	4.2%	3.8%	3.6%	3.4%				Avg Ann'l Div'd Yield	4.2%

CAPITAL STRUCTURE as of 6/30/16
Total Debt \$9514 mill. Due in 5 Yrs \$4793 mill.
LT Debt \$8596 mill. LT Interest \$388 mill.
 Incl. \$110 mill. capitalized leases.
 (LT interest earned: 3.0x)
Leases, Uncapitalized Annual rentals \$20 mill.
Pension Assets-12/15 \$2013 mill.

Pfd Stock \$37 mill. **Pfd Div'd** \$2 mill.
Incl. 373,148 shs. \$4.50 \$100 par, cum., callable at \$110.00.
Common Stock 279,300,000 shs.

MARKET CAP: \$12 billion (Large Cap)

ELECTRIC OPERATING STATISTICS

	2013	2014	2015
% Change Retail Sales (KWH)	-3.1	+1.9	-8
Avg. Indust. Use (MWH)	NMF	NMF	5922
Avg. Indust. Revs. per KWH (\$)	8.93	8.79	8.07
Capacity at Peak (Mw)	8603	8776	8762
Peak Load, Summer (Mw)	8509	7498	7812
Annual Load Factor (%)	50.0	59.7	56.8
% Change Customers (y-end)	+1	-	+6

Fixed Charge Cov. (%)	282	278	288
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ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-2.0%	-2.5%	Nil
"Cash Flow"	4.0%	3.0%	7.0%
Earnings	13.0%	8.5%	6.0%
Dividends	--	16.5%	6.5%
Book Value	2.5%	4.0%	6.0%

BUSINESS: CMS Energy Corporation is a holding company for Consumers Energy, which supplies electricity and gas to lower Michigan (excluding Detroit). Has 1.8 million electric, 1.7 million gas customers. Has 1,034 megawatts of nonregulated generating capacity. Sold Palisades nuclear plant in '07. Electric revenue breakdown: residential, 43%; commercial, 34%; industrial, 16%; other,

7%. Generating sources: coal, 44%; gas, 10%; other, 3%; purchased, 43%. Fuel costs: 47% of revenues. '15 reported deprec. rates: 3.5% electric, 2.8% gas, 8.7% other. Has 7,400 employees. Chairman: John G. Russell. President & CEO: Patti Poppe. Incorporated: Michigan. Address: One Energy Plaza, Jackson, Michigan 49201. Tel.: 517-788-0550. Internet: www.cmsenergy.com.

CMS Energy's utility subsidiary has electric and gas rate cases pending. On the electric side, Consumers Energy is seeking a tariff increase of \$225 million based on an allowed return on equity of 10.7%. At the start of September, the utility self-implemented a \$170 million hike, which it may do under Michigan regulatory law. The staff of the Michigan Public Service Commission (MPSC) is proposing a \$92 million increase, based on a 10% ROE. The MPSC's order is due in late February. On the gas side, Consumers Energy filed for an increase of \$90 million, based on a 10.6% ROE. The utility will self-implement a raise at the beginning of February, with the MPSC's decision due in late July. Rate cases are going to be put forth regularly in the coming years, mainly to place new capital investment in the rate base.

We have trimmed our 2016 earnings estimate by \$0.05 a share. In the current quarter, CMS expects to record an undisclosed charge for an early retirement program. Management will exclude this from its typically narrow earnings guidance of \$1.99-\$2.02 a share, but we will *in-*

clude it, whatever the amount of the charge turns out to be.

Earnings should be much improved in 2017. We assume no additional charges for a workforce reduction. Consumers Energy should benefit from rate relief, assuming reasonable regulatory treatment from the MPSC. Our 2017 profit forecast remains at \$2.15 a share.

There is potential upside to CMS' earnings growth goal of 6%-8% annually. Proposed legislation in Michigan, if enacted, would likely create additional investment opportunities for Consumers Energy. This is not reflected in our estimates and projections. CMS also has some non-regulated generating capacity that would increase its contribution to corporate profits if wholesale power prices rise.

This stock has a dividend yield that is slightly below average, by utility standards. Like many utility issues, the recent quotation is near the upper end of our 2019-2021 Target Price Range. Accordingly, total return potential is negligible, even though we project solid dividend growth through the end of the decade.

Paul E. Debbas, CFA September 16, 2016

(A) Diluted EPS. Excl. nonrec. gains (losses): '05, (\$1.61); '06, (\$1.08); '07, (\$1.26); '09, (7¢); '10, 3¢; '11, 12¢; '12, 14¢; gains (losses) on disc. ops: '05, 7¢; '06, 3¢; '07, (40¢); '09, 8¢; '10, (8¢); '11, 1¢; '12, 3¢. '13 EPS don't add due to rounding. Next earnings report due late Oct. (B) Divs historically paid late Feb., May, Aug., & Nov. ■ Div d reinvestment plan avail.

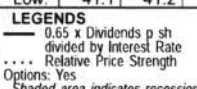
(C) Incl. intang. In '15: \$6.64/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate allowed on com. eq. in '15: 10.3%; earned on avg. com. eq., '15: 13.7%. Regulatory Climate: Average.

Company's Financial Strength	B++
Stock's Price Stability	100
Price Growth Persistence	90
Earnings Predictability	80

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RECENT PRICE	75.33	P/E RATIO	18.5 (Trailing: 19.3 Median: 15.0)	RELATIVE P/E RATIO	1.03	DIV'D YLD	3.7%	VALUE LINE
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[illegible]

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	80	(+5%)	5%
Low	65	(-15%)	1%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	10	8	8	10	8	8	10	8	8
Options	2	1	1	0	2	9	0	2	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	299	368	375
to Sell	287	275	265
Hld's(000)	152749	163563	167516

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH. INDEX
1 yr.	19.3	6.4
3 yr.	46.7	15.7
5 yr.	60.3	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
44.48	45.41	39.65	43.51	40.24	47.66	47.14	48.23	49.62	46.36	45.69	44.17	41.62	42.27	44.11	42.85	39.35	40.35	Revenues per sh	43.75
5.51	5.70	5.44	5.12	4.54	5.27	5.28	5.77	5.99	5.86	6.24	6.61	7.15	7.45	7.30	7.93	7.80	8.30	"Cash Flow" per sh	9.25
2.74	3.21	3.13	2.83	2.32	2.99	2.95	3.48	3.36	3.14	3.47	3.57	3.86	3.93	3.62	4.05	3.95	4.15	Earnings per sh ^A	4.50
2.18	2.20	2.22	2.24	2.26	2.28	2.30	2.32	2.34	2.36	2.38	2.40	2.42	2.46	2.52	2.60	2.68	2.76	Div'd Decl'd per sh ^B	3.00
4.52	5.20	5.68	5.72	5.60	6.59	7.17	7.09	8.50	7.80	6.96	6.72	7.06	8.67	8.26	10.42	14.45	12.25	Cap'l Spending per sh	11.25
25.81	26.71	27.68	28.44	29.09	29.80	31.09	32.58	35.43	36.46	37.93	39.05	40.53	41.81	42.94	44.55	46.80	48.35	Book Value per sh ^C	53.00
212.03	212.15	213.93	225.84	242.51	245.29	257.46	272.02	273.72	281.12	291.62	292.89	292.87	292.87	292.88	293.00	305.00	306.00	Common Shs Outst'g ^D	309.00
12.0	12.0	13.3	14.3	18.2	15.1	15.5	13.8	12.3	12.5	13.3	15.1	15.4	14.7	15.9	15.6	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	16.0
.78	.61	.73	.82	.96	.80	.84	.73	.74	.83	.85	.95	.98	.83	.84	.79			Relative P/E Ratio	1.00
6.6%	5.7%	5.3%	5.5%	5.3%	5.0%	5.0%	4.8%	5.7%	6.0%	5.2%	4.5%	4.1%	4.3%	4.4%	4.1%			Avg Ann'l Div'd Yield	4.2%
CAPITAL STRUCTURE as of 6/30/16						12137	13120	13583	13032	13325	12938	12188	12381	12919	12554	12000	12350	Revenues (\$mill)	13500
Total Debt \$15201 mill. Due in 5 Yrs \$2710 mill.						749.0	936.0	933.0	868.0	992.0	1062.0	1141.0	1157.0	1066.0	1193.0	1190	1285	Net Profit (\$mill)	1395
LT Debt \$13747 mill. LT Interest \$625 mill.						35.2%	32.6%	36.0%	34.2%	36.0%	36.1%	34.5%	31.8%	34.0%	33.6%	34.0%	34.0%	Income Tax Rate	34.0%
LT Interest earned: 3.7x)						1.6%	1.9%	1.7%	2.6%	2.4%	1.6%	.5%	.5%	.3%	.7%	1.0%	1.0%	AFUDC % to Net Profit	1.0%
Leases, Uncapitalized Annual rentals \$18 mill.						50.2%	45.6%	48.3%	48.5%	48.6%	46.5%	45.9%	46.1%	48.0%	47.9%	49.5%	46.5%	Long-Term Debt Ratio	45.5%
Pension Assets-12/15 \$11759 mill.						48.5%	53.1%	50.6%	50.4%	50.4%	52.5%	54.1%	53.9%	52.0%	52.1%	50.5%	53.5%	Common Equity Ratio	54.5%
Oblig \$14377 mill.						16515	16687	19160	20330	21952	21794	21933	22735	24207	25058	28150	27525	Total Capital (\$mill)	30100
						18445	19914	20874	22464	23863	25093	26939	28436	29827	32209	35425	37925	Net Plant (\$mill)	44500
Pfd Stock None						6.0%	7.0%	6.2%	5.7%	5.9%	6.2%	6.5%	6.4%	5.6%	6.0%	5.5%	6.0%	Return on Total Cap'l	5.5%
Common Stock 304,414,974 shs.						9.1%	10.3%	9.4%	8.3%	8.8%	9.1%	9.6%	9.4%	8.5%	9.1%	8.5%	8.5%	Return on Shr. Equity	8.5%
as of 7/29/16						9.2%	10.4%	9.5%	8.4%	8.9%	9.2%	9.6%	9.4%	8.5%	9.1%	8.5%	8.5%	Return on Com Equity ^E	8.5%
MARKET CAP: \$23 billion (Large Cap)						2.6%	3.9%	3.1%	2.5%	3.2%	3.1%	3.6%	3.6%	2.6%	3.5%	2.5%	3.0%	Retained to Com Eq	3.0%
ELECTRIC OPERATING STATISTICS						73%	63%	67%	71%	65%	66%	62%	62%	69%	61%	67%	66%	All Div'ds to Net Prof	66%

	2013	2014	2015	
* Change Retail Sales (KWH)	+1	-1.1	+1.9	BUSINESS: Consolidated Edison, Inc. is a holding company for
Avg. Indust. Use (MWH)	NA	NA	NA	Consolidated Edison Company of New York, Inc. (CECONY), which
Avg. Indust. Revs. per KWH (¢)	NA	NA	NA	sells electricity, gas, and steam in most of New York City and
Capacity at Peak (MW)	NMF	NMF	NMF	Westchester County. Also owns Orange and Rockland Utilities
Peak Load, Summer (MW)	14883	13568	13721	(OR&R), which operates in New York and New Jersey. Has 3.6
Annual Load Factor (%)	NMF	NMF	NMF	million electric, 1.2 million gas customers. Pursues competitive
* Chance Customers (yr-end)	NA	NA	NA	opportunities through three wholly owned subsidiaries. Entered into
				midstream gas joint venture 6/16. Purchases most of its power.
				Fuel costs: 30% of revenues. '15 reported depreciation rates: 3.0%-
				3.1%. Has 14,800 employees. Chairman, President & CEO: John
				McAvoy. Inc.: New York Address: 4 Irving Place, New York, New
				York 10003. Tel.: 212-460-4600. Internet: www.conedison.com .

Consolidated Edison's largest utility subsidiary has reached a settlement of its rate case. Under the agreement, electric rates of Consolidated Edison Company of New York would rise \$195 million in 2017, \$155 million in 2018, and \$155 million in 2019. CECONY would also benefit from amortizations to income of regulatory liabilities: \$84 million, \$83 million, and \$69 million in 2017, 2018, and 2019, respectively. On the gas side, the utility's rates would be cut \$5 million in 2017, but would increase \$92 million in 2018 and \$90 million in 2019. Amortizations to income of regulatory liabilities would amount to \$39 million in 2017, \$37 million in 2018, and \$36 million in 2019. The allowed return on equity would be 9% and the common-equity ratio would be 48%. The New York State Public Service Commission must still rule on the settlement. Its order is expected by yearend.

ConEd made a midstream gas acquisition earlier this year. The company has a 50% interest (\$968 million) in Stagecoach Storage and Stagecoach Pipelines, which serves northern Pennsylvania and southern New York. This contributed

\$0.04 to share net so far in 2016. ConEd also has a 12.5% stake in a proposed \$3.0 billion-\$3.5 billion pipeline in West Virginia. Completion is expected in late 2018.

Earnings should advance in 2017. We assume that the regulatory settlement is approved, and that ConEd benefits from a full year's worth of its investment in Stagecoach.

The company has completed the sale of its retail electric supply business. This deal raised \$200 million. In the third quarter, ConEd booked an aftertax gain of \$47 million (\$0.15 a share) on the sale, which we *excluded* from our earnings presentation as a nonrecurring item.

We look for a dividend hike in early 2017. This has been the pattern in recent years. We estimate that the board will boost the quarterly payout by \$0.02 a share (3.0%), the same increase as in each of the past two years.

This high-quality stock has a dividend yield about equal to the utility mean. With the recent price well within our 2019-2021 Target Price Range, total return potential is low.

Paul E. Debbas, CFA *November 18, 2016*

Fixed Charge Cov. (%)		385	366	370
ANNUAL RATES of change (per sh)				
	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21	
Revenues	--	-2.0%	.5%	
"Cash Flow"	4.5%	4.5%	3.5%	
Earnings	3.5%	3.0%	2.5%	
Dividends	1.0%	1.5%	3.0%	
Book Value	4.0%	3.5%	3.5%	

Calendar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	3306	2767	3440	2868	12381
2014	3789	2911	3390	2829	12919
2015	3616	2788	3443	2707	12554
2016	3156	2994	3417	2633	12000
2017	3300	2800	3450	2800	12350

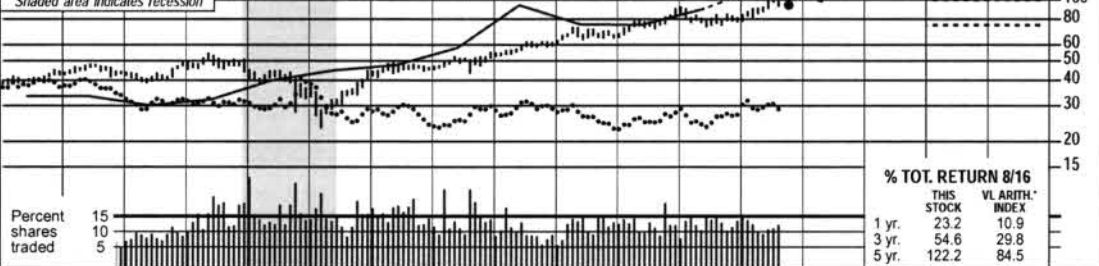
Calendar	EARNINGS PER SHARE ^				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	1.16	.49	1.49	.79	3.93
2014	1.23	.63	1.49	.28	3.62
2015	1.26	.74	1.45	.60	4.05
2016	1.05	.78	1.48	.64	3.95
2017	1.20	.75	1.55	.65	4.15

Calendar	QUARTERLY DIVIDENDS PAID ^B				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.605	.605	.605	.605	2.42
2013	.615	.615	.615	.615	2.46
2014	.63	.63	.63	.63	2.52
2015	.65	.65	.65	.65	2.60
2016	.67	.67	.67		

Company's Financial Strength	A+
Stock's Price Stability	100
Price Growth Persistence	45
Earnings Predictability	95

DOMINION RES. NYSE-D				RECENT PRICE	75.50	P/E RATIO	19.2	(Trailing: 22.8 Median: 18.0)	RELATIVE P/E RATIO	1.07	DIV'D YLD	4.0%	VALUE LINE						
TIMELINESS	3	Lowered 11/18/16	High: 43.5	42.2	49.4	48.5	39.8	45.1	53.6	55.6	68.0	80.9	79.9	79.0	Target Price Range 2019 2020 2021				
SAFETY	2	Raised 9/11/98	Low: 33.3	34.4	39.8	31.3	27.1	36.1	42.1	48.9	51.9	63.1	64.5	66.3					
TECHNICAL	3	Lowered 11/11/16	LEGENDS 0.77 x Dividends p sh divided by Interest Rate Relative Price Strength 2-for-1 split 11/07 Options: Yes Shaded area indicates recession																
BETA	.65	(1.00 = Market)																	
2019-21 PROJECTIONS																			
High	110	Price	Gain	Ann'l Total Return															
Low	80	(+45%)	(+5%)	13%															
Insider Decisions																			
to Buy	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Options	2	8	1	0	4	0	0	0	0	1									
to Sell	0	1	0	0	0	0	0	0	0	0									
Institutional Decisions																			
to Buy	4Q2015	1Q2016	2Q2016	Percent shares traded	15	10	5												
to Sell	390	453	499																
Hlds(000)	394	369	314																
	376903	395360	398528																
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
18.84	19.94	16.58	18.57	20.54	25.96	23.61	27.17	27.93	25.24	26.17	25.24	22.73	22.56	21.25	19.59	18.50	19.15	Revenues per sh	21.50
3.71	3.92	4.45	3.97	4.18	3.70	4.91	5.08	5.07	4.82	5.11	5.04	5.24	5.47	5.71	5.98	6.60	7.30	"Cash Flow" per sh	9.75
1.25	1.49	2.41	1.96	2.13	1.50	2.40	2.13	3.04	2.64	2.89	2.76	2.75	3.09	3.05	3.20	3.65	4.00	Earnings per sh A	5.50
1.29	1.29	1.29	1.29	1.30	1.34	1.38	1.46	1.58	1.75	1.83	1.97	2.11	2.25	2.40	2.59	2.80	3.02	Div'd Decl'd per sh B	3.80
2.82	2.31	2.17	5.20	3.88	4.83	5.81	6.89	6.09	6.40	5.89	6.41	7.20	7.06	9.13	9.35	11.15	8.05	Cap'l Spending per sh	8.25
14.22	15.81	16.57	16.20	16.79	14.96	18.50	16.31	17.28	18.66	20.66	20.49	18.34	20.02	19.74	21.24	24.20	26.30	Book Value per sh C	29.00
491.60	529.40	616.20	650.40	680.40	695.00	698.00	576.80	583.20	599.40	580.80	569.70	576.10	581.50	585.30	596.30	621.00	645.00	Common Shs Outst'g D	625.00
19.4	20.9	12.0	15.2	15.1	24.9	16.0	20.6	13.8	12.7	14.3	17.3	18.9	19.2	23.0	22.1			Avg Ann'l P/E Ratio	17.5
1.26	1.07	.66	.87	.80	1.33	.86	1.09	.83	.85	.91	1.09	1.20	1.08	1.21	1.11			Relative P/E Ratio	1.10
5.3%	4.1%	4.4%	4.3%	4.0%	3.6%	3.6%	3.3%	3.8%	5.2%	4.4%	4.1%	4.1%	3.8%	3.4%	3.7%			Avg Ann'l Div'd Yield	4.0%
CAPITAL STRUCTURE as of 6/30/16																			
Total Debt \$29572 mill. Due in 5 Yrs \$12383 mill.																			
LT Debt \$24787 mill. LT Interest \$1046 mill.																			
(LT interest earned: 3.8x)																			
Leases, Uncapitalized Annual rentals \$67 mill.																			
Pension Assets-12/15 \$6166 mill.																			
Pfd Stock None																			
Common Stock 625,763,030 shs. as of 7/15/16																			
MARKET CAP: \$47 billion (Large Cap)																			
ELECTRIC OPERATING STATISTICS																			
2013 2014 2015																			
% Change Retail Sales (KWH)																			
Avg. Indust. Use (MWH)																			
Avg. Indust. Revs. per KWH (¢)																			
Capacity at Peak (Mw)																			
Peak Load, Summer (Mw)																			
Annual Load Factor (%)																			
% Change Customers (yr-end)																			
Fixed Charge Cov. (%)																			
ANNUAL RATES																			
Past 10 Yrs. Past 5 Yrs. Est'd '13-'15 of change (per sh)																			
Revenues																			
"Cash Flow"																			
Earnings																			
Dividends																			
Book Value																			
QUARTERLY REVENUES (\$ mill.)																			
Mar.31 Jun.30 Sep.30 Dec.31 Full Year																			
2013 2014 2015 2016 2017																			
EARNINGS PER SHARE A																			
Mar.31 Jun.30 Sep.30 Dec.31 Full Year																			
2013 2014 2015 2016 2017																			
QUARTERLY DIVIDENDS PAID B																			
Mar.31 Jun.30 Sep.30 Dec.31 Full Year																			
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RECENT PRICE	94.16	P/E RATIO	18.7 (Trailing: 20.8 Median: 16.0)	RELATIVE P/E RATIO	0.99	DIV'D YLD	3.3%	VALUE LINE
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[illegible]

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
39.24	48.71	40.30	41.76	40.84	50.74	50.93	54.28	57.23	48.45	50.51	52.57	51.01	54.56	69.50	57.60	56.80	59.85	Revenues per sh	68.50
8.59	6.98	8.31	6.95	6.81	8.14	8.19	8.48	8.26	9.38	9.78	9.57	9.77	10.13	11.85	9.44	10.30	11.25	"Cash Flow" per sh	13.75
3.27	2.15	3.83	2.85	2.55	3.27	2.45	2.66	2.73	3.24	3.74	3.67	3.88	3.76	5.10	4.45	4.80	5.30	Earnings per sh ^A	6.25
2.06	2.06	2.06	2.06	2.06	2.06	2.08	2.12	2.12	2.12	2.18	2.32	2.42	2.59	2.69	2.84	3.00	3.16	Div'd Decl'd per sh ^B ■	3.70
5.25	6.80	5.88	4.45	5.19	5.99	7.92	7.96	8.42	6.26	6.49	8.77	10.56	10.59	11.58	11.26	14.50	14.70	Cap'l Spending per sh	13.50
28.15	28.48	27.26	31.36	31.85	32.44	33.02	35.86	36.77	37.96	39.67	41.41	42.78	44.73	47.05	48.88	50.70	53.10	Book Value per sh ^C	61.00
142.65	161.13	167.46	168.61	174.21	177.81	177.14	163.23	163.02	165.40	169.43	169.25	172.35	177.09	176.99	179.47	179.50	180.50	Common Shs Outst'g ^D	184.00
10.3	19.3	11.3	13.7	16.0	13.8	17.4	18.3	14.8	10.4	12.3	13.5	14.9	17.9	14.9	18.1	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	14.0
67	99	62	78	85	73	94	97	89	69	78	85	95	1.01	78	91			Relative P/E Ratio	9.0
6.1%	5.0%	4.8%	5.3%	5.0%	4.6%	4.9%	4.4%	5.2%	6.3%	4.8%	4.7%	4.2%	3.8%	3.5%	3.5%			Avg Ann'l Div'd Yield	4.2%

CAPITAL STRUCTURE as of 6/30/16		9022.0	8861.0	9329.0	8014.0	8557.0	8897.0	8791.0	9661.0	12301	10337	10200	10800	Revenues (\$mill)	12600
Total Debt \$9683 mill. Due in 5 Yrs \$2204 mill.		437.0	453.0	445.0	532.0	630.0	624.0	666.0	661.0	905.0	796.0	870	960	Net Profit (\$mill)	1140
LT Debt \$9343 mill. LT Interest \$434 mill.		23.9%	25.1%	34.9%	31.6%	32.7%	35.9%	29.8%	27.5%	28.5%	25.6%	26.0%	26.0%	Income Tax Rate	26.0%
Incl. \$12 mill. capitalized leases and \$780 mill. Trust Preferred Securities.		5.0%	7.1%	11.2%	2.6%	1.6%	1.6%	3.0%	3.5%	4.1%	4.3%	4.0%	4.0%	AFUDC % to Net Profit	3.0%
(LT interest earned: 3.7x)		56.1%	54.4%	56.4%	54.0%	51.3%	50.6%	48.8%	47.7%	50.0%	50.2%	51.0%	52.0%	Long-Term Debt Ratio	53.5%
		43.9%	45.6%	43.6%	46.0%	48.7%	49.4%	51.2%	52.3%	50.0%	49.8%	49.0%	48.0%	Common Equity Ratio	46.5%
Leases, Uncapitalized Annual rentals \$37 mill.		13323	12824	13736	13648	13811	14196	14387	15135	16670	17607	18625	19875	Total Capital (\$mill)	24100
Pension Assets-12/15 \$3832 mill.		11451	11408	12231	12431	12992	13746	14684	15800	16820	18034	19650	21225	Net Plant (\$mill)	25100
Oblig \$4971 mill.		5.1%	5.3%	5.0%	5.7%	6.3%	5.9%	6.1%	5.7%	6.6%	5.7%	6.0%	6.0%	Return on Total Cap'l	6.0%
Pfd Stock None		7.5%	7.7%	7.4%	8.5%	9.4%	8.9%	9.0%	8.3%	10.9%	9.1%	9.5%	10.0%	Return on Shr. Equity	10.0%
MARKET CAP: \$17 billion (Large Cap)		7.5%	7.7%	7.4%	8.5%	9.4%	8.9%	9.0%	8.3%	10.9%	9.1%	9.5%	10.0%	Return on Com Equity ^E	10.0%
ELECTRIC OPERATING STATISTICS		1.2%	1.5%	1.7%	2.9%	4.0%	3.4%	3.5%	2.7%	5.2%	3.4%	3.5%	4.0%	Retained to Com Prof	4.0%
		84%	80%	77%	65%	57%	62%	61%	67%	52%	63%	62%	59%	All Div'ds to Net Prof	60%

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Avg.
% Change Retail Sales (KWH)	8	-1.7	-6																
Avg. Indust. Use (MWH)	NA	NA	NA																
Avg. Indust. Revs per KWH (\$)	NMF	NMF	NMF																
Capacity at Peak (MW)	NA	NA	NA																
Peak Load, Summer (MW)	NA	NA	NA																
Annual Load Factor (%)	NA	NA	NA																
% Chance Customers (yr-end)	NA	NA	NA																

BUSINESS: DTE Energy Company is a holding company for DTE Electric (formerly Detroit Edison), which supplies electricity in Detroit and a 7,600-square-mile area in southeastern Michigan, and DTE Gas (formerly Michigan Consolidated Gas). Customers: 2.1 mill. electric, 1.3 mill. gas. Has various nonutility operations. Electric revenue breakdown: residential, 45%; commercial, 35%; industrial, 13%; other, 7%. Generating sources: coal, 67%; nuclear, 17%; gas, 1%; purchased, 15%. Fuel costs: 54% of revenues. '15 reported deprec. rates: 3.5% electric, 2.6% gas. Has 10,000 employees. Chairman & CEO: Gerard M. Anderson. President & COO: Jerry Norcia. Inc.: MI. Address: One Energy Plaza, Detroit, MI 48226-1279. Tel.: 313-235-4000. Internet: www.dteenergy.com

Fixed Charge Cov. (%)	271	357	279
ANNUAL RATES	Past	Past	Est'd '13-'15
of change (per sh)	10 Yrs.	5 Yrs.	to '19-'21
Revenues	3.0%	3.0%	2.0%
"Cash Flow"	3.5%	3.0%	4.5%
Earnings	4.5%	6.5%	6.0%
Dividends	3.0%	5.0%	5.5%
Book Value	4.0%	4.0%	4.5%

Calendar	QUARTERLY REVENUES (\$ mill.)					Full Year
	Mar.31	Jun.30	Sep.30	Dec.31		
2013	2516	2225	2387	2533	9661.0	Service Commission (MPSC) is proposing a boost of \$189 million, based on a 10% ROE. DTE Gas is requesting \$183 million, based on a return of 10.75% on a common-equity ratio of 52%. The utility plans to self-implement a \$103 million hike on or after November 1st. The MPSC's staff is
2014	3930	2698	2595	3078	12301	
2015	2984	2268	2598	2487	10337	
2016	2566	2262	2700	2672	10200	
2017	2900	2300	2800	2800	10800	

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.34	.60	1.13	.69	3.76
2014	1.84	.70	.88	1.68	5.10
2015	1.53	.61	1.47	.84	4.45
2016	1.37	.84	1.49	1.10	4.80

2017	1.60	1.00	1.35	1.75	5.30
Calendar	QUARTERLY DIVIDENDS PAID ^a				Full
	Mar.31	Jun.30	Sep.30	Dec.31	Year
2012	.5875	.5875	.5875	.62	2.38
2013	.62	.62	.655	.655	2.55
2014	.655	.655	.655	.69	2.66
2015	.69	.69	.69	.73	2.80

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EDISON INTERNAT'L NYSE-EIX										RECENT PRICE	72.07	P/E RATIO	18.1	(Trailing: 19.2)	Median: 12.0	RELATIVE P/E RATIO	0.98	DIV'D YLD	2.9%	VALUE LINE
TIMELINESS	3	Lowered 10/14/16	High: 49.2	Low: 30.4	47.2	60.3	55.7	36.7	39.4	41.6	48.0	54.2	68.7	69.6	78.7	Target Price Range 2019 2020	2021			
SAFETY	2	Raised 5/3/13	LEGENDS																	
TECHNICAL	3	Lowered 10/28/16	1.10 x Dividends p sh																	
BETA	.65	(1.00 = Market)	divided by Interest Rate																	
2019-21 PROJECTIONS			Options: Yes																	
			Shaded area indicates recession																	

EL PASO ELECTRIC NYSE-EE										RECENT PRICE	43.74	P/E RATIO	17.9	(Trailing: 23.9 Median: 15.0)	RELATIVE P/E RATIO	0.97	DIV'D YLD	2.9%	VALUE LINE						
TIMELINESS	2	Raised 4/1/16	High: 22.4	25.0	28.2	25.5	21.1	28.7	35.7	35.3	39.1	42.2	41.3	48.8					Target Price	Range					
SAFETY	2	Raised 5/11/07	Low: 17.8	18.2	20.8	15.2	11.6	18.7	26.7	29.2	31.8	33.4	33.8	37.2					2019	2020					
TECHNICAL	2	Raised 10/21/16	LEGENDS — 5.0 x "Cash Flow" p sh Relative Price Strength Options: Yes Shaded area indicates recession																		2021				
BETA	.70	(1.00 = Market)																							
2019-21 PROJECTIONS																									
	Price	Gain	Ann'l Total																						
High	55	(+25%)	9%																						
Low	40	(-10%)	1%																						
Insider Decisions																									
	D	J	F	M	A	M	J	J	A																
to Buy	0	0	0	0	0	0	0	0	0																
Options	1	12	0	0	5	10	0	4	0																
to Sell	0	0	0	0	0	1	0	0	0																
Institutional Decisions																									
	4Q2015	1Q2016	2Q2016																						
to Buy	87	95	90																						
to Sell	53	68	75																						
Hld's(000)	39215	39921	38927																						
			Percent shares traded	21	14	7																			

(A) Diluted earnings. Excl. nonrecurring gains (losses): '01, (4¢); '03, 81¢; '04, 4¢; '05, (2¢); '06, 13¢; '10, 24¢. '14 earnings don't add to '06-13 year total due to rounding. Next earnings report due early Nov. (B) Initial dividend declared 4/11; payment dates in late March, June, Sept., and Dec. (C) Incl. deferred charges. In '15: \$115.1 mill., \$2.85/sh. (D) In millions. (E) Rate allowed on common equity in TX in '12: none specified; in NM in '16: 9.48%; earned on avg. com. eq., '15: 8.2%. Regulatory Climate: TX, Average; NM, Below Average.

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RECENT PRICE	79.57	P/E RATIO	11.3 (Trailing: 10.2 Median: 13.0)	RELATIVE P/E RATIO	0.60	DIV'D YLD	4.4%	VALUE LINE	
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TIMELINESS	3	Raised 2/12/16
SAFETY	3	Lowered 3/22/13
TECHNICAL	1	Raised 8/19/16
BETA	.65	(1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	105	(+30%)	11%
Low	70	(-10%)	2%

Insider Decisions

	N	D	J	F	M	A	M	J	J
to Buy	0	0	0	0	0	0	0	0	0
Options	0	10	16	14	10	1	3	10	0
to Sell	0	0	1	5	0	4	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	230	270	264
to Sell	240	210	219
Hld's(000)	151676	156504	153958

High: 79.2 94.0 125.0 127.5 86.6 84.3 74.5 74.5 72.6 92.0 90.3 82.1

Low: 64.5 66.8 89.6 61.9 59.9 68.7 57.6 61.6 60.2 60.4 61.3 65.4

LEGENDS:
 — 0.82 x Dividends p sh divided by Interest Rate
 Relative Price Strength
 Options: Yes
 Shaded area indicates recession

% TOT. RETURN 8/16

	THIS STOCK	VL ARITH.' INDEX
1 yr.	25.4	10.9
3 yr.	42.1	29.8
5 yr.	52.0	84.5

Percent shares traded

	30	20	10
to Buy	30	20	10
to Sell	30	20	10

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
45.61	43.59	37.34	40.17	46.69	46.61	53.94	59.47	69.15	56.82	64.27	63.67	57.94	63.86	69.71	64.54	60.90	62.00	Revenues per sh	67.00
6.49	6.41	7.62	7.43	8.33	8.18	10.69	11.73	12.89	13.29	16.54	17.53	15.98	16.25	17.68	17.71	18.30	16.95	"Cash Flow" per sh	19.00
2.97	3.08	3.68	3.69	3.93	4.40	5.36	5.60	6.20	6.30	6.66	7.55	6.02	4.96	5.77	5.81	7.00	5.35	Earnings per sh ^A	6.25
1.22	1.28	1.34	1.60	1.89	2.16	2.16	2.58	3.00	3.00	3.24	3.32	3.32	3.32	3.32	3.34	3.42	3.52	Div'd Decl'd per sh ^{B +}	4.00
6.80	6.25	6.88	6.85	6.51	6.72	9.44	10.29	13.92	12.99	13.33	15.21	18.18	15.73	14.82	16.79	16.00	19.25	Cap'l Spending per sh ^C	16.25
31.89	33.78	35.24	38.02	38.26	35.71	40.45	40.71	42.07	45.54	47.53	50.81	51.73	54.00	55.83	51.89	55.50	57.40	Book Value per sh ^D	64.00
219.60	220.73	222.42	228.90	216.83	216.83	202.67	193.12	189.36	189.12	178.75	176.36	177.81	178.37	179.24	178.39	179.00	179.00	Common Shs Outst'g ^D	179.00
10.1	12.5	11.5	13.8	15.1	16.3	14.3	19.3	16.6	12.0	11.6	9.1	11.2	13.2	12.9	12.5	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	14.0
.66	.64	.63	.79	.80	.87	.77	1.02	1.00	.80	.74	.57	.71	.74	.68	.63			Relative P/E Ratio	9.0
4.1%	3.3%	3.2%	3.1%	3.2%	3.0%	2.8%	2.4%	2.9%	4.0%	4.2%	4.9%	4.9%	5.1%	4.5%	4.6%			Avg Ann'l Div'd Yield	4.5%

CAPITAL STRUCTURE as of 6/30/16	10932	11484	13094	10746	11488	11229	10302	11391	12495	11513	10900	11100	Revenues (\$mill)	12000
Total Debt \$14809 mill. Due in 5 Yrs \$5237.8 mill.	1160.9	1160.0	1240.5	1251.1	1270.3	1367.4	1091.9	904.5	1060.0	1061.2	1285	985	Net Profit (\$mill)	1140
LT Debt \$13112 mill. LT Interest \$612.3 mill.	27.6%	30.7%	32.7%	33.6%	32.7%	17.3%	13.0%	26.7%	37.8%	2.2%	14.5%	38.5%	Income Tax Rate	38.5%
Incl. \$716.2 mill. of securitization bonds.	5.5%	5.8%	5.6%	7.4%	7.4%	8.9%	11.9%	10.1%	9.3%	7.4%	7.0%	10.0%	AFUDC % to Net Profit	8.0%
(LT interest earned: 2.6x)	51.2%	54.3%	58.2%	55.3%	56.3%	52.2%	55.8%	55.1%	54.9%	57.8%	55.5%	54.0%	Long-Term Debt Ratio	54.0%
Leases, Uncapitalized Annual rentals \$78.3 mill.	46.7%	43.9%	40.2%	43.1%	42.1%	46.4%	42.9%	43.6%	43.8%	40.8%	43.0%	44.5%	Common Equity Ratio	45.0%
Pension Assets-12/15 \$4707.4 mill.	17539	17902	17975	19985	20166	19324	21432	22109	22842	22714	23125	23125	Total Capital (\$mill)	25400
Oblig \$6848.2 mill.	19438	20974	22429	23389	23848	25609	27299	27882	28723	27824	29675	31100	Net Plant (\$mill)	33900
Pfd Stock \$318.2 mill. Pfd Div'd \$21.1 mill.	8.0%	7.9%	7.5%	7.6%	7.7%	8.5%	6.4%	5.4%	6.0%	6.0%	7.0%	5.5%	Return on Total Cap'l	6.0%
6,115,105 sh. 4.32%-8.25%, \$100 par; 1,000,000 sh. 8.95%; 250,000 sh. 8.75%, all without sinking fund.	13.6%	14.2%	15.0%	14.0%	14.4%	14.8%	11.5%	9.1%	10.3%	11.1%	12.5%	9.5%	Return on Shr. Equity	9.5%
Common Stock 178,982,069 shs. as of 7/29/16	13.8%	14.4%	15.3%	14.3%	14.7%	15.0%	11.6%	9.2%	10.4%	11.2%	12.5%	9.5%	Return on Com Equity ^E	10.0%
MARKET CAP: \$14 billion (Large Cap)	8.3%	8.0%	8.1%	7.6%	7.6%	8.4%	5.2%	3.0%	4.4%	4.8%	6.5%	3.5%	Retained to Cor Eq	3.5%
ELECTRIC OPERATING STATISTICS	41%	46%	48%	48%	49%	45%	56%	68%	58%	58%	49%	66%	All Div'ds to Net Prof	65%

	2013	2014	2015	
% Change Retail Sales (KWH)	+7	+2.9	+1.3	BUSINESS: Entergy Corporation supplies electricity to 2.9 million customers through subsidiaries in Arkansas, Louisiana, Mississippi, Texas, and New Orleans (regulated separately from Louisiana). Distributes gas to 201,000 customers in Louisiana. Has a nonutility subsidiary that owns six nuclear units (one no longer operating). Electric revenue breakdown: residential, 38%; commercial, 27%; industrial, 26%; other, 9%. Generating sources: gas, 35%; nuclear, 31%; coal, 7%; purchased, 27%. Fuel costs: 33% of revenues. '15 reported depreciation rate: 2.9%. Has 13,600 employees. Chairman & CEO: Leo Denault. Incorporated: Delaware. Address: 639 Loyola Avenue, P.O. Box 61000, New Orleans, Louisiana 70161. Telephone: 504-576-4000. Internet: www.entergy.com .
Avg. Indust. Use (MW/H)	910	951	957	
Avg. Indust. Revs. per KWH(c)	5.77	6.00	5.55	
Capacity at Peak (MW)	23802	24367	24504	
Peak Load, Summer (MW)	21581	20472	20472	
Annual Load Factor (%)	62	65	61	
% Change Customers (Y-r-end)	+8	+6	+1.0	

Fixed Charge Cov. (%)	245	309	223
ANNUAL RATES	Past	Past	Est'd '13-'15
of change (per sh)	10 Yrs.	5 Yrs.	to '19-'21
Revenues	4.0%	1.0%	<i>Nil</i>
"Cash Flow"	8.0%	4.0%	1.5%
Earnings	3.0%	-3.0%	2.0%
Dividends	6.0%	1.5%	3.0%
Book Value	3.5%	3.5%	3.0%

Calendar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	2609	2738	3352	2692	11391
2014	3209	2997	3458	2831	12495
2015	2920	2713	3371	2509	11513
2016	2610	2463	3300	2527	10900
2017	2700	2500	3300	2600	11100

Entergy's second-quarter earnings require an explanation. The company's profit of \$3.16 a share included \$2.01 a share from a favorable resolution of uncertain income tax positions. This is the second straight year in which Entergy has benefited from positive tax items, as is evident in the tax rate shown in the statistical array. The company's earnings guidance for 2016 is now \$6.60-\$7.40 a share, and our revised estimate of \$7.00 (up from the previous \$5.10) is within this range. Assuming no unusual tax items in 2017, earnings will likely regress to a more-typical level. At least Entergy should benefit from better operations at the Indian Point nuclear plant next year, which had an extended outage in 2016.

Prospects at the utilities are generally good. Entergy is benefiting from rate hikes associated with the purchase in early 2016 of a 1,948-megawatt gas-fired generating plant. The company also received a tariff hike in Arkansas in February, and has filed for additional rate relief through the state's new formula rate plan. Entergy has similar rate plans in Louisiana and Mississippi, as well. The utility has other

opportunities to enhance growth by investing in its electric system, such as a project to install advanced meters beginning this year.

Low power prices continue to affect Entergy's nonregulated operations. This can be seen in the company's reduced profitability in recent years, compared with the 2008-2012 period. As a result, Entergy has shut (or announced plans to close) some of its nonutility nuclear plants. The FitzPatrick unit, in upstate New York, was one of them, but Entergy has found a buyer that has agreed to pay \$110 million. The companies hope to get approval from the New York commission by November.

We look for a dividend hike at the board meeting in the fourth quarter. We estimate that the directors will boost the quarterly payout by \$0.02 a share (2.4%), the same increase as a year earlier. **Entergy stock offers a dividend yield that is a percentage point above the utility mean.** Total return potential to 2019-2021 is also a cut above the industry average.

Paul E. Debbas, CFA September 16, 2016

(A) Diluted EPS. Excl. nonrecurring gains (losses): '01, 15¢; '02, (\$1.04); '03, 33¢ net; '05, (21¢); '12, (\$1.26); '13, (\$1.14); '14, (56¢); '15, (\$6.99). '14 EPS don't add due to round-

Next earnings report due early Nov. (B) is historically paid in early Mar., June, & Dec. ■ Div'd reinvestment plan avail. † shareholder investment plan avail. (C) Incl.

Company's Financial Strength	B++
Stock's Price Stability	95
Price Growth Persistence	15
Earnings Predictability	70

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GREAT PLAINS EN'GY NYSE-GXP				RECENT PRICE	27.90	P/E RATIO	21.0 (Trailing: 20.8 Median: 16.0)	RELATIVE P/E RATIO	1.11	DIV'D YLD	3.9%	VALUE LINE										
TIMELINESS 3	Lowered 9/2/16	High: 32.8	Low: 27.1	32.8	27.1	33.4	29.3	20.5	19.9	22.1	22.8	24.9	29.5	30.3	32.7							
SAFETY 3	Lowered 12/26/08	27.1	27.1	26.9	15.6	10.2	16.6	16.3	19.5	20.4	23.8	24.1	25.9									
TECHNICAL 1	Raised 8/19/16																					
BETA .75	(1.00 = Market)																					
2019-21 PROJECTIONS																						
		Price	Gain	Ann'l Total																		
		35	(+25%)	Return																		
		25	(-10%)	9%																		
Insider Decisions																						
		N	D	J	F	M	A	M	J	J												
to Buy		0	0	0	0	0	0	0	0	0												
Options		0	2	0	0	13	0	0	2	0												
to Sell		0	0	0	0	7	0	0	0	0												
Institutional Decisions																						
		4Q2015	1Q2016	2Q2016																		
to Buy		113	156	189																		
to Sell		117	114	119																		
Hld's(000)		123580	125292	125742																		
				Percent																		
				shares																		
				traded																		
				8																		
				24																		
				16																		
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	Target Price Range
	2019 2020 2021
120	
100	
80	
64	
48	

					36
					32
					24

				20
				16
				12
			% TOT RETURN 8/16	8

	THIS STOCK	VL. ARITH. INDEX
1 yr.	46.3	10.9
3 yr.	71.4	29.8
5 yr.	125.9	84.5

6	2017	© VALUE LINE PUB. LLC	19-21
55	17.55	Revenues per sh	20.85
55	4.00	"Cash Flow" per sh	5.15
30	2.45	Earnings per sh ^A	3.25
20	1.25	Div ^d Div ^d Div ^d per sh ^B ■	1.40
15	2.45	Cap ^l Spending per sh	4.15
15	22.15	Book Value per sh ^E	25.00
00	35.00	Common Shs Outst ^g ^C	36.00
figures are Value Line estimates		Avg Ann ^l P/E Ratio	15.0
		Relative P/E Ratio	95
		Avg Ann ^l Div ^d Yield	2.9%

80	615	Revenues (\$mill)	750
0.0	85.0	Net Profit (\$mill)	115
0%	35.0%	Income Tax Rate	35.0%
0%	2.0%	AFUDC % to Net Profit	2.0%

2.0%	2.0%	AFUDC % to Net Profit	2.0%
5%	35.5%	Long-Term Debt Ratio	38.0%
5%	64.5%	Common Equity Ratio	62.0%
15	1200	Total Capital (\$mill)	1450
100	1225	Net Plant (\$mill)	1650

2%	2.0%	AFUDC % to Net Profit	2.0%
5%	35.5%	Long-Term Debt Ratio	38.0%
6%	64.5%	Common Equity Ratio	62.0%
15	1200	Total Capital (\$mill)	1450
180	1325	Net Plant (\$mill)	1650
0%	8.0%	Return on Total Cap'l	9.0%
0%	11.0%	Return on Shr. Equity	13.0%
0%	11.0%	Return on Com Equity ^D	13.0%

0%	5.5%	Retained to Com Eq	7.0%
8%	51%	All Div'ds to Net Prof	44%

ces, '15: coal, 48%; purchased power, 40%;
er, 12%. Fuel costs: 24% of revenues. '15
rate: 3.6%. Has 708 employees. Chairman,
ary J. Wolter. Incorporated: Wisconsin. Ad-
ir St., Madison, WI 53788. Telephone: 608-

s rates for 2017. This would be associated with the state's election and MGE's natural gas rate improvements.

prospects look fairly attractive. The company's utility oper-

come timely. Also, MGE Energy works for Safety, Financial

marks for Safety, Financial
ce Stability, and Earnings
Volatility is below average
e expect solid bottom-line
e company out to 2019-2021.
shares presently trade at a
lgs multiple that is well
istorical average and long

Volatility is below average. We expect solid bottom-line performance for the company out to 2019-2021. The stock is presently traded at a price-to-earnings multiple that is well below the historical average, and long-term return potential appears fairly attractive at this time. The dividend yield is attractive for a utility, too. This equity has a strong momentum-seeking accounts, and with a long time horizon can be a better choice elsewhere.

increase to gas rates for 2017. This would cover costs associated with the state's electric transmission and MGE's natural gas infrastructure improvements.

Long-term prospects look fairly attractive here. The company's utility operations should continue to benefit from favorable demographics in its service territories. Limited exposure to economically sensitive industrial customers means greater stability. Efforts to control operating costs ought to support earnings.

This stock is timely. Also, MGE Energy earns good marks for Safety, Financial Strength, Price Stability, and Earnings Predictability. Volatility is below average here, too. We expect solid bottom-line growth for the company out to 2019-2021. However, the shares presently trade at a price-to-earnings multiple that is well above their historical average, and long-term total return potential appears fairly limited at this time. The dividend yield is below average for a utility, too. This equity may interest momentum-seeking accounts, but investors with a long time horizon can probably find better choices elsewhere.

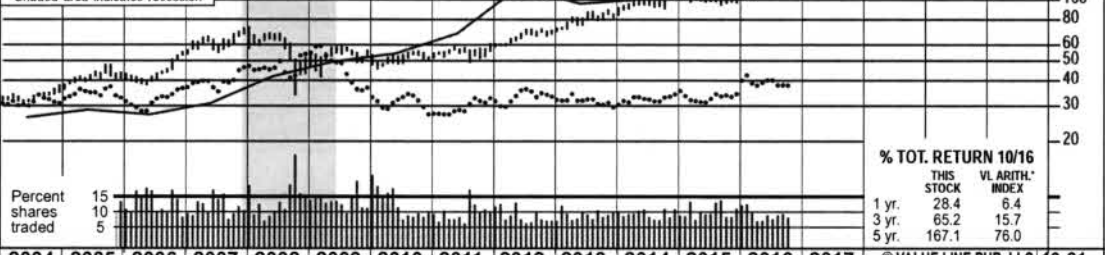
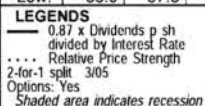
Michael Napoli CFA September 16, 2016

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	70
Earnings Predictability	90

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RECENT PRICE	125.17	P/E RATIO	21.5 (Trailing: 26.4 Median: 15.0)	RELATIVE P/E RATIO	1.19	DIV'D YLD	3.0%	VALUE LINE
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[illegible]

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
20.15	24.10	22.74	26.13	28.27	30.00	38.75	37.47	40.13	37.82	36.39	36.88	33.62	34.80	38.42	37.93	33.60	34.25	Revenues per sh	38.50
4.94	5.02	4.51	5.36	5.60	6.18	6.77	6.85	8.03	8.75	9.62	9.29	8.69	10.54	12.10	12.92	11.30	12.90	"Cash Flow" per sh	15.00
2.07	2.31	2.01	2.45	2.46	2.32	3.23	3.27	4.07	3.97	4.74	4.82	4.56	4.83	5.60	6.06	4.70	6.05	Earnings per sh ^A	7.25
1.08	1.12	1.16	1.20	1.30	1.42	1.50	1.64	1.78	1.89	2.00	2.20	2.40	2.64	2.90	3.08	3.48	3.92	Div'd Decl'd per sh ^B + †	5.40
3.70	3.28	3.44	3.75	3.75	4.09	9.22	12.32	12.80	14.52	13.89	15.93	22.31	15.36	15.84	18.17	20.25	14.60	Cap'l Spending per sh	17.00
15.91	17.10	17.48	18.91	20.25	21.52	24.49	26.35	28.57	31.35	34.36	35.92	37.90	41.47	44.96	48.97	52.25	55.20	Book Value per sh ^C	63.25
351.53	351.71	365.51	368.53	372.24	394.85	405.40	407.35	408.92	413.62	420.86	416.00	424.00	435.00	443.00	461.00	482.00	496.00	Common Shs Outst'g ^D	502.00
12.8	12.5	14.2	12.6	13.6	17.9	13.7	18.9	14.5	13.4	10.8	11.5	14.4	16.6	17.3	16.9	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	20.0
.83	.64	.78	.72	.72	.95	.74	1.00	.87	.89	.69	.72	.92	.93	.91	.85			Relative P/E Ratio	1.25
4.1%	3.9%	4.1%	3.9%	3.9%	3.4%	3.4%	2.7%	3.0%	3.5%	3.9%	4.0%	3.6%	3.3%	3.0%	3.0%			Avg Ann'l Div'd Yield	3.7%

CAPITAL STRUCTURE as of 9/30/16		15710	15263	16410	15643	15317	15341	14256	15136	17021	17486	16200	17000	Revenues (\$mill)	19300
Total Debt \$31677 mill. Due in 5 Yrs \$14015 mill.		1281.0	1312.0	1639.0	1615.0	1957.0	2021.0	1911.0	2062.0	2465.0	2752.0	2205	2990	Net Profit (\$mill)	3695
LT Debt \$28195 mill. LT Interest \$1241 mill.		23.7%	21.9%	21.5%	16.8%	21.4%	22.4%	26.6%	26.9%	32.3%	30.8%	28.0%	30.0%	Income Tax Rate	30.0%
(LT interest earned: 3.5x)		3.8%	5.7%	6.6%	7.9%	4.4%	4.4%	10.8%	7.0%	3.5%	5.7%	8.0%	5.0%	AFUDC % to Net Profit	4.0%
		49.1%	51.2%	54.2%	55.7%	55.5%	58.2%	59.1%	57.1%	55.0%	54.2%	53.5%	51.0%	Long-Term Debt Ratio	48.5%
		50.9%	48.8%	45.8%	44.3%	44.5%	41.8%	40.9%	42.9%	45.0%	45.8%	46.5%	49.0%	Common Equity Ratio	51.5%
Pension Assets-12/15 \$3563 mill.		19521	22015	25514	29267	32474	35753	39245	42009	44283	49255	53950	56075	Total Capital (\$mill)	61900
Oblig \$2403 mill.		24499	28652	32411	36078	39075	42490	49413	52720	55705	61386	67875	71725	Net Plant (\$mill)	84500
Pfd Stock None		8.0%	7.5%	7.9%	6.9%	7.4%	7.0%	6.2%	6.2%	6.9%	6.7%	5.0%	6.5%	Return on Total Cap'l	7.0%
Common Stock 467,267,977 shs.		12.9%	12.2%	14.0%	12.5%	13.5%	13.5%	11.9%	11.4%	12.4%	12.2%	8.5%	11.0%	Return on Shr. Equity	11.5%
		12.9%	12.2%	14.0%	12.5%	13.5%	13.5%	11.9%	11.4%	12.4%	12.2%	8.5%	11.0%	Return on Com Equity ^E	11.5%
MARKET CAP: \$58 billion (Large Cap)		6.9%	6.1%	7.9%	6.5%	7.8%	7.4%	5.6%	5.2%	6.0%	6.1%	2.0%	4.0%	Retained to Com E	3.0%
ELECTRIC OPERATING STATISTICS		46%	50%	44%	47%	42%	46%	53%	54%	51%	50%	74%	64%	All Div'ds to Net Prof	73%

FINANCIAL OPERATIONS (\$ MIL.)				PERCENTAGE OF SALES											
	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015
% Change Retail Sales (KWH)	+9	+5.2	+5.6												
Avg. Indust. Use (KWH)	296	294	277												
Avg. Indust. Revs. per MWH (\$)	6.51	6.95	6.69												
Capacity at Peak (Mw)	26236	27055	26073												
Peak Load, Summer (Mw)	21576	22900	22717												
Annual Load Factor (%)	NA	NA	NA												
% Change Customers (y-end)	+1.8	+1.4	+1.4												

BUSINESS: NextEra Energy, Inc. (formerly FPL Group, Inc.) is a holding company for Florida Power & Light Company (FPL), which provides electricity to 4.8 million customers in a 27,650-sq.-mi. area in eastern & southern Florida. NextEra Energy Resources is a non-regulated power generator with nuclear, gas, & wind ownership. Has a 79.9% stake in NextEra Energy Partners. Rev. breakdown:

residential, 54%; commercial, 36%; industrial & other, 10%. Generating sources: gas, 69%; nuclear, 22%; coal, 4%; purchased, 5%. Fuel costs: 30% of revs. 15 reported dep. rate (utility): 33%. Has 13,800 employees. Chairman: Lewis Hay, III. President and CEO: James L. Robo. Inc.: FL. Address: 700 Universe Blvd., Juno Beach, FL 33408. Tel.: 561-694-4000. Internet: www.nexteraenergy.com.

Fixed Charge Cov. (%)	295	334	357
ANNUAL RATES	Past	Past	Es'd '13-'15
of charge (per sh)	10 Yrs.	5 Yrs.	to '19-'21
Revenues	3.0%	-5%	.5%
"Cash Flow"	7.5%	6.0%	4.0%

Earnings	8.5%	5.0%	4.5%
Dividends	8.0%	8.5%	11.0%
Book Value	8.5%	7.5%	6.0%

Cal- endar	QUARTERLY REVENUES (\$ mill.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	3279	3833	4394	3630	15136
2014	3674	4029	4654	4664	17021
2015	4104	4358	4954	4069	17485
2016	3835	3817	4805	3743	16200
2017	4000	4200	4800	4000	17000

Calendar Year	EARNINGS PER SHARE ^A					Firm Year
	Mar.31	Jun.30	Sep.30	Dec.31		
2013	1.00	1.44	1.64	.75	4.83	<p>advance of the closing. The company has already sold \$1.5 billion of equity units (mandatorily convertible debt), and will soon issue common stock. NextEra is also raising funds by selling assets.</p> <p>Florida Power & Light has reached a settlement of its rate case. The agreement will allow the company to raise rates to cover the cost of new investments in gas pipelines and renewable energy projects, and will also provide for a 12% return on equity.</p>
2014	.98	1.12	1.50	2.00	5.60	
2015	1.45	1.59	1.93	1.10	6.06	
2016	1.41	.61	1.62	1.06	4.70	
2017	1.50	1.65	1.75	1.15	6.05	

Calendar	QUARTERLY DIVIDENDS PAID ^B †				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2012	.60	.60	.60	.60	2.40
2013	.66	.66	.66	.66	2.64
2014	.725	.725	.725	.725	2.90
2015	.725	.725	.725	.725	2.90

2015	.77	.77	.77	.77	3.08	financial operation. FLE would also receive	of most utility issues.
2016	.87	.87	.87			rate relief for up to 300 megawatts an-	Paul E. Debbas, CFA November 18, 2016

<p>A) Diluted EPS. Excl. nonrecr. gains (losses): 00, '56; 02, (60¢); '03, '56; '11, (24¢); '13, 80¢; '16, 55¢; gain on disc. ops.: '13, 44¢. '15 EPS don't add due to rounding. Net earnings</p> <p>© 2016 Value Line Inc. All rights reserved. Federal</p>	<p>report due late Jan. (B) Div'ds historically paid in mid-Mar., mid-June, mid-Sept., & mid-Dec. ■ Div'd reinvestment plan avail. ↑ Shareholder investment plan avail. (C) Incl. deferred charges.</p> <p>material is obtained from sources believed to be reliable and is provided without representation of any kind.</p>	<p>In '15: \$6.36/sh. (D) In mill., adj. for stock split. (E) Rate allowed on com. eq. in '13: 9.5%-11.5%; earned on avg. com. eq., '15: 12.9%. Regulatory Climate: Average.</p>	<p>Company's Financial Strength Stock's Price Stability Price Growth Persistence Earnings Predictability</p>	<p>A 100 75 65</p>
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OTTER TAIL CORP. NDQ-OTTR				RECENT PRICE	35.31	P/E RATIO	21.8	(Trailing: 21.8 Median: 23.0)	RELATIVE P/E RATIO	1.15	DIV'D YLD	3.6%	VALUE LINE									
TIMELINESS	2	Raised 8/19/16	High: 32.0	31.9	39.4	46.2	25.4	25.4	23.5	25.3	31.9	32.7	33.4	35.4	Target Price	2019	2020	2021				
SAFETY	2	Raised 6/17/16	Low: 24.0	25.8	29.0	15.0	15.5	18.2	17.5	20.7	25.2	26.5	24.8	25.8								
TECHNICAL	2	Raised 8/19/16	LEGENDS 1.00 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession																			
BETA	.85	(1.00 = Market)	2019-21 PROJECTIONS Price 45 Gain (+25%) Ann'l Total Return 10% High 30 Low 30																			
Insider Decisions			N	D	J	F	M	A	M	J	J											
to Buy			0	0	0	0	0	0	0	0	0											
Options			0	0	0	0	0	0	0	0	0											
to Sell			0	0	0	0	0	0	0	0	0											
Institutional Decisions			4Q2015	1Q2016	2Q2016	Percent shares traded						9	6	3								
to Buy			46	68	68																	
to Sell			51	35	44																	
Hld's(000)			12314	13048	13887																	
			2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017												© VALUE LINE PUB. LLC		19-21					
			23.45	26.53	27.75	29.28	30.45	35.59	37.43	41.50	37.06	29.03	31.08	29.86	23.76	24.63	21.48	20.60	20.75	20.90	Revenues per sh	26.00
			3.21	3.40	3.44	3.30	2.88	3.35	3.39	3.55	2.81	2.76	2.60	2.36	2.71	3.02	3.09	3.14	3.40	3.60	"Cash Flow" per sh	4.20
			1.60	1.68	1.79	1.51	1.50	1.78	1.69	1.78	1.09	.71	.38	.45	1.05	1.37	1.55	1.56	1.60	1.65	Earnings per sh ^A	2.10
			1.02	1.04	1.06	1.08	1.10	1.12	1.15	1.17	1.19	1.19	1.19	1.19	1.19	1.21	1.23	1.25	1.27	1.27	Div'd Decl'd per sh ^B	1.33
			1.85	2.17	2.95	1.97	1.72	2.04	2.35	5.43	7.51	4.95	2.38	2.04	3.20	4.53	4.40	4.23	4.50	4.65	Cap'l Spending per sh	5.00
			10.87	11.33	12.25	12.98	14.81	15.80	16.67	17.55	19.14	18.78	17.57	15.83	14.43	14.75	15.39	15.98	16.90	18.50	Book Value per sh ^C	20.95
			23.85	24.65	25.59	25.72	28.98	29.40	29.52	29.85	35.38	35.81	36.00	36.10	36.17	36.27	37.22	37.86	39.00	40.00	Common Shs Outst'g ^D	43.00
			13.5	16.4	16.0	17.8	17.3	15.4	17.3	19.0	30.1	31.2	55.1	47.5	21.7	21.1	18.8	18.2	18.2	18.2	Avg Ann'l P/E Ratio	18.0
			.88	.84	.87	1.01	.91	.82	.93	1.01	1.81	2.08	3.51	2.98	1.38	1.19	.99	.92	.92	.92	Relative P/E Ratio	1.15
			4.7%	3.8%	3.7%	4.0%	4.2%	4.1%	3.9%	3.5%	3.6%	5.4%	5.7%	5.6%	5.2%	4.1%	4.1%	4.3%	4.3%	4.3%	Avg Ann'l Div'd Yield	3.5%
CAPITAL STRUCTURE as of 6/30/16			1105.0 1238.9 1311.2 1039.5 1119.1 1077.9 859.2 893.3 799.3 779.8 810 835												Revenues (\$mill)		1100					
Total Debt \$595.6 mill. Due in 5 Yrs \$167.0 mill.			50.8 54.0 35.1 26.0 13.6 16.4 39.0 50.2 56.9 58.6 60.0 65.0												Net Profit (\$mill)		90.0					
LT Debt \$493.8 mill. LT Interest \$30.0 mill.			34.8% 34.1% 30.0% -- -- 14.5% 5.2% 21.3% 22.5% 27.0% 25.0% 25.0%												Income Tax Rate		30.0%					
(LT interest earned: 4.3x)			1.9% 4.2% 6.1% 4.0% 6% 3.8% 1.7% -- 1.7% 3.6% 3.0% 4.0%												AFUDC % to Net Profit		5.0%					
Leases, Uncapitalized Annual rentals \$7 mill.			33.5% 38.9% 32.9% 38.8% 40.2% 44.6% 44.0% 42.1% 46.5% 42.4% 45.5% 46.0%												Long-Term Debt Ratio		47.0%					
Pension Assets-12/15 \$233.6 mill. Oblig. \$302.7 mill.			64.5% 59.4% 65.6% 59.8% 58.4% 54.0% 54.4% 57.9% 53.5% 57.6% 54.5% 54.0%												Common Equity Ratio		53.0%					
Pfd Stock None			763.0 882.1 1032.5 1124.4 1083.3 1058.9 959.2 924.4 1071.3 1051.0 1210 1365												Total Capital (\$mill)		1700					
Common Stock 38,772,031 shs. as of 7/31/16			718.6 854.0 1037.6 1098.6 1108.7 1077.5 1049.5 1167.0 1268.5 1387.8 1475 1550												Net Plant (\$mill)		1900					
MARKET CAP: \$1.4 billion (Mid Cap)			7.7% 7.2% 4.3% 3.4% 2.7% 3.2% 5.7% 6.7% 6.7% 6.7% 6.0% 6.0%												Return on Total Cap'l		6.5%					
ELECTRIC OPERATING STATISTICS			10.0% 10.0% 5.1% 3.8% 2.1% 2.8% 7.3% 9.4% 9.9% 9.7% 9.0% 9.0%												Return on Shr. Equity ^E		10.0%					
			10.2% 10.2% 5.1% 3.8% 2.0% 2.7% 7.3% 9.3% 9.9% 9.7% 9.0% 9.0%												Return on Com Equity		10.0%					
			3.3% 3.5% NMF NMF NMF NMF NMF NMF 1.2% 2.2% 2.0% 1.5%												Retained to Com Eq		3.5%					
			68% 66% 108% NMF NMF NMF NMF 113% 87% 78% 79% 82% 79%												All Div'ds to Net Prof		64%					
Fixed Charge Cov. (%)			359 336 350																			
ANNUAL RATES			Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15																	
of change (per sh)			10 Yrs.	5 Yrs.	to '19-'21																	
Revenues			-3.5%	-7.0%	2.5%																	
"Cash Flow"			-5%	2.5%	5.5%																	
Earnings			-5%	15.5%	6.0%																	
Dividends			1.0%	1.5%	1.5%																	
Book Value			.5%	-3.5%	5.5%																	
QUARTERLY REVENUES (\$ mill.)			Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year														
2013			218.0	212.4	229.8	233.1	893.3															
2014			215.0	194.4	196.5	193.4	799.3															
2015			202.8	188.2	200.0	188.8	779.8															
2016			206.2	203.5	205	195.3	810															
2017			212	208	210	205	835															
EARNINGS PER SHARE ^A			Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year														
2013			.41	.21	.41	.35	1.37															
2014			.59	.27	.43	.28	1.55															
2015			.37	.36	.42	.41	1.56															
2016			.38	.41	.44	.37	1.60															
2017			.40	.37	.46	.42	1.65															
QUARTERLY DIVIDENDS PAID ^B			Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year														
2012			.298	.298	.298	.298	1.19															
2013			.298	.298	.298	.298	1.19															
2014			.303	.303	.303	.303	1.21															
2015			.308	.308	.308	.308	1.23															
2016			.313	.313	.313	.313																

Business: Otter Tail Corporation is the parent of Otter Tail Power Company, which supplies electricity to over 130,000 customers in Minnesota (50% of retail elec. revs.), North Dakota (41%), and South Dakota (9%). Electric rev. breakdown, '15: residential, 32%; commercial & farms, 35%; industrial, 30%; other, 3%. Fuel costs: 15.5% of revenues. Also has operations in manufacturing and plastics. 2015 depr. rate: 2.9%. Has 2,005 employees. Off. and dir. own 1.6% of common stock; Cascade Investment, LLC, 9.1%; The Vanguard Group, 7.1%; BlackRock, Inc., 5.4% (3/16 Proxy). CEO: Charles MacFarlane, Inc.: MN. Address: 215 South Cascade St., P.O. Box 496, Fergus Falls, Minnesota 56538-0496. Telephone: 866-410-8780. Internet: www.ottertail.com.

Shares of Otter Tail have continued to advance in price over the past three months. The company reported strong performance for the second quarter. Revenue and share net compared favorably with the prior-year figures. The Electric segment benefited from strong sales to pipeline customers and greater revenue from interim rates (discussed below), while margins improved nicely at the Manufacturing line.

Otter Tail Power Company is executing its capital investment plan under a constructive regulatory framework. Its \$858 million utility capital spending plan for 2016 through 2020 includes two large regional transmission projects and several generation investments. The company expects these will drive annual growth of 8% in the utility rate base through the end of the decade (with 2014 as the starting point). The two 345-kilovolt transmission projects are expected to be completed in 2017 and 2019.

The utility is benefiting from interim rates. Otter Tail Power filed with the Minnesota Public Utilities Commission (MPUC) early in the year, seeking to increase rates by approximately \$19.3 million (9.8%). The MPUC granted a 9.56% increase on an interim basis, starting in mid-April. A final determination is expected next year.

Prospects for the long haul appear favorable. The utility should continue to report healthy performance going forward. Meanwhile, custom metal fabricator BTD should further benefit from productivity improvements. Market conditions remain soft here, though we expect BTD to be in a good position when its business climate improves. Elsewhere, we remain optimistic about prospects for the low-cost businesses that comprise Otter Tail's plastics segment. But margins may well remain compressed here in the near term.

These shares are timely. We look for solid improvement in revenues and earnings for the company out to 2019-2021. But this appears to be largely reflected in the recent quotation, and appreciation potential is limited at this juncture. A healthy dividend yield ought to support total returns here. Still, this equity appears most suitable as a year-ahead selection.

Michael Napoli, CFA September 16, 2016

(A) Diluted earnings. Excl. nonrecurring gains (losses): '10, (44¢); '11, 26¢; '13, 2¢; gains (losses) from discount operations: '04, 8¢; '05, 33¢; '06, 1¢; '11, (\$1.11); '12, (\$1.22); '13, 2¢; '14, 2¢; '15, 2¢. Earnings may not sum due to rounding. Next earnings report due early November. (B) Div'ds historically paid in early March, June, Sept., and Dec. ■ Div'd reinvest-

ment plan avail. (C) Incl. intangibles. In '15: \$55.4 mill., \$1.46/sh. (D) In mill. (E) Regulatory Climate: MN, ND, Average; SD, Above Average.

plastics. 2015 depr. rate: 2.9%. Has 2,005 employees. Off. and dir. own 1.6% of common stock; Cascade Investment, LLC, 9.1%; The Vanguard Group, 7.1%; BlackRock, Inc., 5.4% (3/16 Proxy). CEO: Charles MacFarlane, Inc.: MN. Address: 215 South Cascade St., P.O. Box 496, Fergus Falls, Minnesota 56538-0496. Telephone: 866-410-8780. Internet: www.ottertail.com.

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Michael Napoli, CFA September 16, 2016

Company's Financial Strength B++
Stock's Price Stability 85
Price Growth Persistence 20
Earnings Predictability 50

PG&E CORP. NYSE-PCG					RECENT PRICE	60.93	P/E RATIO	17.3	(Trailing: 38.6)	Median: 16.0	RELATIVE P/E RATIO	0.94	DIV'D YLD	3.3%	VALUE LINE					
TIMELINESS	2	Raised 7/29/16	High: 40.1	48.2	52.2	45.7	45.8	48.6	48.0	47.0	48.5	55.2	60.2	65.4						
SAFETY	3	Lowered 2/3/12	Low: 31.8	36.3	42.6	26.7	34.5	34.9	36.8	39.4	39.9	39.4	47.3	50.7						
TECHNICAL	3	Lowered 10/28/16	<div>LEGENDS</div> <div>0.87 x Dividends p sh divided by Interest Rate</div> <div>Relative Price Strength</div> <div>Options: Yes</div> <div>Shaded area indicates recession</div>																	
BETA	.65	(1.00 = Market)																		
2019-21 PROJECTIONS				Price	Gain	Ann'l Total														
				High	80	(+30%)	10%													
				Low	50	(-20%)	-1%													
Insider Decisions				D	J	F	M	A	M	J	J	A								
				to Buy	0	0	0	0	0	0	0	0								
				Options	0	0	1	1	0	1	1	0								
				to Sell	0	0	0	2	0	0	0	0								
Institutional Decisions				4Q2015	1Q2016	2Q2016	Percent	24												
				to Buy	273	303	302	16												
				to Sell	207	194	200	8												
				Hld's(000)	399882	409084	404165													
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21	
67.75	63.18	32.74	25.05	26.47	31.78	36.02	37.42	40.51	36.15	35.02	36.28	34.92	34.16	35.91	34.21	33.45	34.90	Revenues per sh	39.25	
.80	5.66	1.14	4.80	5.71	7.12	7.76	8.02	8.44	8.37	8.22	8.08	7.32	6.33	8.13	7.29	8.60	9.90	"Cash Flow" per sh	11.00	
d9.21	3.02	d2.36	2.05	2.12	2.35	2.76	2.78	3.22	3.03	2.82	2.78	2.07	1.83	3.06	2.00	2.90	3.90	Earnings per sh ^A	4.50	
1.20	--	--	--	--	1.23	1.32	1.44	1.56	1.68	1.82	1.82	1.82	1.82	1.82	1.82	1.93	2.08	Div'd Decl'd per sh ^B = [†]	2.70	
4.54	7.33	7.94	4.08	3.72	4.90	6.90	7.83	10.05	10.68	9.62	9.79	10.74	11.40	10.16	10.51	11.10	11.35	Cap'l Spending per sh	11.50	
8.19	11.89	9.47	10.12	20.62	19.60	22.44	24.18	25.97	27.88	28.55	29.35	30.35	31.41	33.09	33.69	35.35	37.30	Book Value per sh ^C	42.25	
387.19	363.38	381.67	416.52	418.62	368.27	348.14	353.72	361.06	370.60	395.23	412.26	430.72	456.67	475.91	492.03	505.00	510.00	Common Shs Outst'g ^D	525.00	
--	4.8	--	9.5	13.8	15.4	14.8	16.8	12.1	13.0	15.8	15.5	20.7	23.7	15.0	26.4	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	14.5	
--	.25	--	.54	.73	.82	.80	.89	.73	.87	1.01	.97	1.32	1.33	.79	1.33			Relative P/E Ratio	.90	
4.8%	--	--	--	--	3.4%	3.2%	3.1%	4.0%	4.3%	4.1%	4.2%	4.2%	4.2%	4.0%	3.4%			Avg Ann'l Div'd Yield	4.1%	
CAPITAL STRUCTURE as of 6/30/16						12539	13237	14628	13399	13841	14956	15040	15598	17090	16833	16900	17800	Revenues (\$mill)	20650	
Total Debt \$18214 mill. Due in 5 Yrs \$5102 mill.						1005.0	1020.0	1198.0	1168.0	1113.0	1132.0	893.0	828.0	1450.0	988.0	1470	2005	Net Profit (\$mill)	2425	
LT Debt \$16525 mill. LT Interest \$766 mill.						35.5%	34.6%	26.2%	31.1%	33.0%	30.3%	23.9%	24.5%	19.2%	19.2%	25.0%	25.5%	Income Tax Rate	27.0%	
(LT interest earned: 1.8x)						6.7%	9.4%	9.5%	11.9%	14.4%	11.2%	17.5%	17.9%	10.0%	15.7%	11.0%	8.0%	AFUDC % to Net Profit	7.0%	
Pension Assets-12/15 \$13745 mill.						51.7%	52.6%	52.2%	51.4%	49.6%	48.8%	48.7%	46.6%	48.5%	48.8%	49.5%	49.0%	Long-Term Debt Ratio	49.0%	
Oblig. \$16299 mill.						46.8%	46.1%	46.5%	47.4%	49.3%	50.2%	50.4%	52.5%	50.7%	50.4%	49.5%	50.5%	Common Equity Ratio	50.5%	
Pfd Stock \$252 mill. Pfd Div'd \$14 mill.						16696	18558	20163	21793	22863	24119	25956	27311	31050	32858	35925	37800	Total Capital (\$mill)	43900	
4,534,958 shs. 4.36% to 5%, cumulative and \$25 par, redeemable from \$25.75 to \$27.25; 5,784,825 shs. 5.00% to 6.00%, cumulative nonredeemable and \$25 par.						21785	23656	26261	28892	31449	33655	37523	41252	43941	46723	49450	52200	Net Plant (\$mill)	60300	
Common Stock 498,506,353 shs. as of 7/19/16						7.6%	7.4%	7.8%	6.7%	6.2%	5.9%	4.7%	4.2%	5.8%	4.1%	5.0%	6.5%	Return on Total Cap'l	6.5%	
MARKET CAP: \$30 billion (Large Cap)						12.5%	11.6%	12.4%	11.0%	9.6%	9.2%	6.7%	5.7%	9.1%	5.9%	8.0%	10.5%	Return on Shr. Equity	11.0%	
						12.7%	11.8%	12.6%	11.2%	9.7%	9.2%	6.7%	5.7%	9.1%	5.9%	8.0%	10.5%	Return on Com Equity ^E	11.0%	
						6.8%	6.0%	6.8%	5.5%	3.9%	3.4%	1.0%	.2%	3.9%	.7%	3.0%	5.0%	Retained to Com Eq	4.5%	
						47%	50%	47%	52%	61%	63%	85%	96%	58%	88%	66%	53%	All Div'ds to Net Prof	59%	
ELECTRIC OPERATING STATISTICS						2013	2014	2015												
% Change Retail Sales (KWH)						+5	-2	-5												
Avg. Indust. Use (MWH)						NA	NA	NA												
Avg. Indust. Revs. per KWH (\$)						9.28	9.98	9.73												
Capacity at Peak (Mw)						NMF	NMF	NMF												
Peak Load, Summer (Mw)						NMF	NMF	NMF												
Annual Load Factor (%)						NMF	NMF	NMF												
% Change Customers (yr-end)						+3	+6	+7												
Fixed Charge Cov. (%)						223	304	189												
ANNUAL RATES						Past	Past	Est'd '13-'15												
of change (per sh)						10 Yrs.	5 Yrs.	to '19-'21												
Revenues						2.5%	-1.5%	2.0%												
"Cash Flow"						2.0%	-3.0%	7.0%												
Earnings						.5%	-5.5%	12.0%												
Dividends						--	-1.5%	7.0%												
Book Value						7.0%	3.5%	4.5%												
Cal-	QUARTERLY REVENUES (\$ mill.)				Full															
endar	Mar.31	Jun.30	Sep.30	Dec.31	Year															
2013	3672	3776	4175	3975	15598															
2014	3891	3952	4939	4308	17090															
2015	3899	4217	4550	4167	16833															
2016	3974	4169	4557	4200	16900															
2017	4200	4400	4800	4400	17800															
Cal-	EARNINGS PER SHARE ^A				Full															
endar	Mar.31	Jun.30	Sep.30	Dec.31	Year															
2013	.55	.74	.36	.19	1.83															
2014	.49	.57	1.71	.27	3.06															
2015	.27	.83	.63	.27	2.00															
2016	.22	.46	1.60	.62	2.90															
2017	.85	.75	1.55	.75	3.90															
Cal-	QUARTERLY DIVIDENDS PAID ^B = [†]				Full															
endar	Mar.31	Jun.30	Sep.30	Dec.31	Year															
2012	.455	.455	.455	.455	1.82															
2013	.455	.455	.455	.455	1.82															
2014	.455	.455	.455	.455	1.82															
2015	.455	.455	.455	.455	1.82															
2016	.455	.455	.49	.49																

BUSINESS: PG&E Corporation is a holding company for Pacific Gas and Electric Company and nonutility subsidiaries. Supplies electricity and gas to most of northern and central California. Has 5.3 million electric and 4.4 million gas customers. Electric revenue breakdown: residential, 38%; commercial, 40%; industrial, 12%; agricultural, 9%; other, 1%. Generating sources: nuclear, 23%; gas, 9%; hydro, 5%; purchased, 63%. Fuel costs: 34% of revenues. '15 reported depreciation rate (utility): 3.8%. Has 23,000 employees. Chairman, President & Chief Executive Officer: Anthony F. Earley, Jr. Incorporated: California. Address: 77 Beale Street, P.O. Box 770000, San Francisco, California 94177. Telephone: 415-973-1000. Internet: www.pgecorp.com.

PG&E's utility subsidiary has reached a settlement of its general rate case. Pacific Gas and Electric had filed for rate increases of \$319 million in 2017, \$467 million in 2018, and \$368 million in 2019. The company reached a contested settlement calling for tariff hikes of \$88 million in 2017, \$444 million in 2018, and \$361 million in 2019. The settlement also recommends another \$361 million raise in 2020, but this is one of the contested issues. A final decision is expected in February, with the ruling being retroactive to the start of 2017.

The Earnings Predictability rating overstates the predictability of PG&E's quarterly profits. Since a gas pipeline exploded in San Bruno, California in September of 2010, the company has been incurring costs associated with the accident, including unrecovered expenses and capital costs associated with upgrading its gas system. This is why earnings have generally been weak since then. Moreover, PG&E is also recording costs—and booking insurance recoveries—related to a large fire that occurred in 2015 when a tree came in contact with a power line.

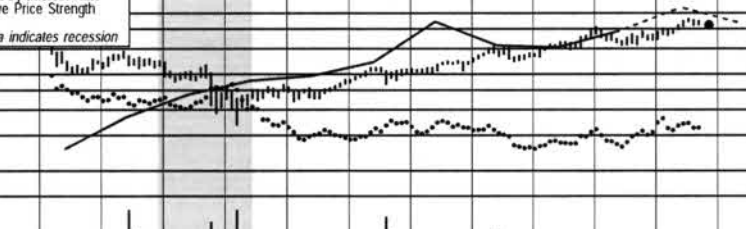
We include all of these expenses and insurance recoveries in our earnings presentation. Because we figure these costs will be much lower in 2017, we forecast a significant profit recovery next year. We do exclude fines that have been imposed on the company, including one of \$24 million (\$0.05 a share) that PG&E booked in the June quarter of 2016 for poor recordkeeping in the gas division. Our 2016 earnings estimate is within the company's guidance of \$2.83-\$3.15 a share on a GAAP basis.

The share count has risen significantly in recent years. PG&E has been raising common equity to pay its fines and support its capital spending. The company expects \$800 million in equity needs for the year. Beginning in 2017, PG&E's annual equity requirements will probably be lower.

This timely stock has a dividend yield that is slightly below average, for a utility. Total return potential to 2019-2021 is unspectacular. Like most utility issues, the recent quotation of PG&E stock is within our 3- to 5-year Target Price Range.

Paul E. Debbas, CFA

October 28, 2016

PORTLAND GENERAL NYSE-POR				RECENT PRICE	41.77	P/E RATIO	18.8	(Trailing: 20.2 Median: 15.0)	RELATIVE P/E RATIO	1.02	DIV'D YLD	3.2%	VALUE LINE															
TIMELINESS	3	Lowered 8/19/16		High:	35.0	31.3	27.7	21.4	22.7	26.0	28.1	33.3	40.3	41.0	45.2		Target Price Range	2019	2020	2021								
SAFETY	2	Raised 5/4/12		Low:	24.2	25.5	15.4	13.5	17.5	21.3	24.3	27.4	29.0	33.0	35.3													
TECHNICAL	3	Lowered 9/30/16		<div>LEGENDS</div> <div>0.73 x Dividends p sh divided by Interest Rate</div> <div>..... Relative Price Strength</div> <div>Options: Yes</div> <div>Shaded area indicates recession</div> 																								
BETA	.70	(1.00 = Market)																										
2019-21 PROJECTIONS																												
	Price	Gain	Ann'l Total Return																									
High	45	(+10%)	5%																									
Low	30	(-30%)	-4%																									
Insider Decisions																												
	D	J	F	M	A	M	J	J	A																			
to Buy	0	0	0	0	0	0	0	0	0																			
Options	0	0	0	0	0	0	0	0	0																			
to Sell	0	0	0	0	0	0	0	0	0																			
Institutional Decisions																												
	4Q2015	1Q2016	2Q2016	Percent shares traded																								
to Buy	125	139	119	21																								
to Sell	106	116	133	14																								
Hld's(000)	86623	87246	86154	7																								
2000	2001	2002	2003	2004	2005F	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21									
--	--	--	--	--	23.14	24.32	27.87	27.89	23.99	23.67	24.06	23.89	23.18	24.29	21.38	21.35	22.40	Revenues per sh	24.50									
--	--	--	--	--	4.75	4.64	5.21	4.71	4.07	4.82	4.96	5.15	4.93	6.08	5.37	5.75	6.10	"Cash Flow" per sh	7.25									
--	--	--	--	--	1.02	1.14	2.33	1.39	1.31	1.66	1.95	1.87	1.77	2.18	2.04	2.15	2.35	Earnings per sh ^	2.75									
--	--	--	--	--	--	.68	.93	.97	1.01	1.04	1.06	1.08	1.10	1.12	1.18	1.26	1.34	Div'd Decl'd per sh ^ + †	1.60									
--	--	--	--	--	4.08	5.94	7.28	6.12	9.25	5.97	3.98	4.01	8.40	12.87	6.73	7.45	4.55	Cap'l Spending per sh	3.50									
--	--	--	--	--	19.15	19.58	21.05	21.64	20.50	21.14	22.07	22.87	23.30	24.43	25.43	26.30	27.20	Book Value per sh ^	30.25									
--	--	--	--	--	62.50	62.50	62.53	62.58	75.21	75.32	75.36	75.56	78.09	78.23	88.79	89.00	89.20	Common Shs Outst'g ^	89.80									
--	--	--	--	--	23.4	11.9	16.3	14.4	12.0	12.4	14.0	16.9	15.3	17.7	17.7	17.7	17.7	Avg Ann'l P/E Ratio	14.0									
--	--	--	--	--	1.26	.63	.98	.96	.76	.78	.89	.95	.81	.81	.81	.81	.81	Relative P/E Ratio	.90									
--	--	--	--	--	2.5%	3.3%	4.3%	5.4%	5.2%	4.4%	4.1%	3.7%	3.3%	3.3%	3.3%	3.3%	3.3%	Avg Ann'l Div'd Yield	4.2%									
CAPITAL STRUCTURE as of 6/30/16					1520.0	1743.0	1745.0	1804.0	1783.0	1813.0	1805.0	1810.0	1900.0	1898.0	1900	2000	Revenues (\$mill)	2200										
Total Debt \$2324 mill. Due in 5 Yrs \$698 mill.					71.0	145.0	87.0	95.0	125.0	147.0	141.0	137.0	175.0	172.0	195	210	Net Profit (\$mill)	245										
LT Debt \$2324 mill. LT Interest \$112 mill.					33.6%	33.8%	28.7%	28.8%	30.5%	28.3%	31.4%	23.2%	26.0%	20.7%	21.5%	21.5%	Income Tax Rate	21.5%										
(LT interest earned: 2.6x)					33.8%	17.9%	17.2%	31.6%	17.6%	5.4%	7.1%	14.6%	33.7%	19.8%	13.0%	5.0%	AFUDC % to Net Profit	3.0%										
Leases, Uncapitalized Annual rentals \$10 mill.					43.4%	49.9%	46.2%	50.3%	53.0%	49.6%	47.1%	51.3%	52.7%	47.8%	48.0%	48.0%	Long-Term Debt Ratio	47.5%										
Pension Assets-12/15 \$550 mill.					56.6%	50.1%	53.8%	49.7%	47.0%	50.4%	52.9%	48.7%	47.3%	52.2%	52.0%	52.0%	Common Equity Ratio	52.0%										
Oblig. \$758 mill.					2161.0	2629.0	2518.0	3100.0	3390.0	3298.0	3264.0	3735.0	4037.0	4329.0	4490	4655	Total Capital (\$mill)	5200										
Pfd Stock None					2718.0	3066.0	3301.0	3858.0	4133.0	4285.0	4392.0	4880.0	5679.0	6012.0	6355	6425	Net Plant (\$mill)	6200										
Common Stock 88,921,050 shs. as of 7/15/16					4.7%	6.9%	5.0%	4.5%	5.4%	6.2%	5.9%	5.1%	5.8%	5.4%	5.5%	5.5%	Return on Total Cap'l	6.0%										
MARKET CAP: \$3.7 billion (Mid Cap)					5.8%	11.0%	6.4%	6.2%	7.9%	8.8%	8.2%	7.5%	9.2%	7.6%	8.0%	8.5%	Return on Shr. Equity	9.0%										
ELECTRIC OPERATING STATISTICS					5.8%	11.0%	6.4%	6.2%	7.9%	8.8%	8.2%	7.5%	9.2%	7.6%	8.0%	8.5%	Return on Com Equity ^	9.0%										
					3.5%	6.6%	2.0%	1.5%	3.0%	4.1%	3.5%	2.9%	4.6%	3.3%	3.5%	3.5%	Retained to Com Eq	3.5%										
					39%	40%	69%	76%	62%	54%	57%	61%	50%	56%	58%	57%	All Div'ds to Net Prof	59%										
ANNUAL RATES					2013	2014	2015																					
Past 10 Yrs.					16258	16577	17827																					
Revenues					1.2	1.2	1.2																					
"Cash Flow"					4.84	5.13	5.01																					
Earnings					4380	4910	4609																					
Dividends					3869	3866	3255																					
Book Value					NA	NA	NA																					
Fixed Charge Cov. (%)					+9	+7	+1.2																					
QUARTERLY REVENUES (\$ mill.)					2013	2014	2015																					
Cal-ender					Mar.31	Jun.30	Sep.30	Dec.31																				
2013					473.0	403.0	435.0	499.0																				
2014					493.0	423.0	484.0	500.0																				
2015					473.0	450.0	476.0	499.0																				
2016					487.0	428.0	480	505																				
2017					525	445	505	525																				
EARNINGS PER SHARE ^					2013	2014	2015	2016	2017																			
Cal-ender					Mar.31	Jun.30	Sep.30	Dec.31																				
2013					.65	.13	.40	.59	1.77																			
2014					.73	.43	.47	.55	2.18																			
2015					.62	.44	.40	.57	2.04																			
2016					.68	.42	.45	.60	2.15																			
2017					.75	.45	.50	.65	2.35																			
QUARTERLY DIVIDENDS PAID ^ + †					2012	2013	2014	2015	2016	2017																		
Cal-ender					Mar.31	Jun.30	Sep.30	Dec.31																				
2012					.265	.265	.27	.27	1.07																			
2013					.27	.27	.275	.275	1.09																			

Business: Portland General Electric Company (PGE) provides electricity to 860,000 customers in 52 cities in a 4,000-square-mile area of Oregon, including Portland and Salem. The company is in the process of decommissioning the Trojan nuclear plant, which it closed in 1993. Electric revenue breakdown: residential, 47%; commercial, 35%; industrial, 12%; other, 6%. Generating sources: gas, 23%; coal, 19%; wind, 8%; hydro, 7%; purchased, 43%. Fuel costs: 35% of revenues. '15 reported depreciation rate: 3.6%. Has 2,600 employees. Chairman: Jack E. Davis. President and Chief Executive Officer: James J. Piro. Incorporated: Oregon. Address: 121 S.W. Salmon Street, Portland, Oregon 97204. Telephone: 503-464-8000. Internet: www.portlandgeneral.com.

Despite the problems with the Carty construction, earnings are likely to advance this year. The rate increase will help. Also, the service area's economy is in good shape, with modest load growth expected. Our earnings estimate is within management's targeted range of \$2.05-\$2.20 a share.

We forecast further bottom-line improvement in 2017. The first-quarter comparison will be easy because a milder-than-normal winter and subpar conditions for PGE's wind projects hurt the utility in the first period of 2016. However, we have reduced our estimate by a nickel a share due to the aforementioned drag on earnings because a portion of Carty is not reflected in rates.

This stock has a high valuation. The dividend yield is below the utility mean, and the recent price is above the midpoint of our 2019-2021 Target Price Range. Perhaps the valuation reflects some takeover speculation, especially in view of all of the merger and acquisition activity in this industry. In any case, we advise against purchasing this stock in the hope of a buyout.

Paul E. Debbas, CFA *October 28, 2016*

Company's Financial Strength B++

Stock's Price Stability 95

Price Growth Persistence 70

Earnings Predictability 70

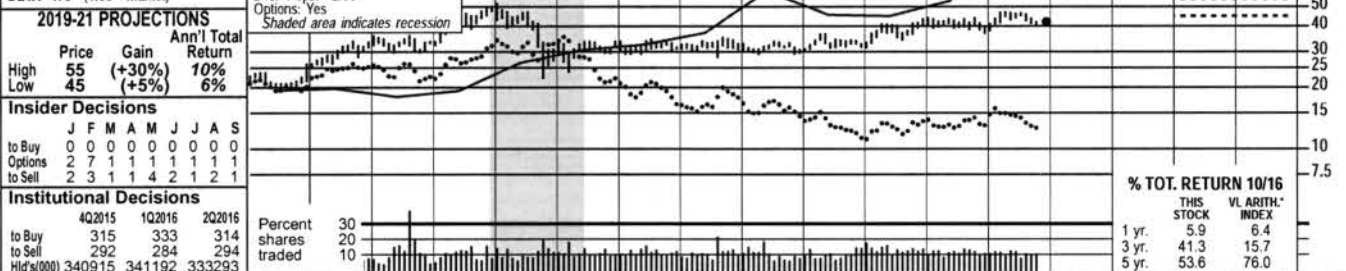
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(A) Diluted EPS. Excl. nonrecurring loss: '13, 42¢. '15 earnings don't add due to rounding. Next earnings report due early Nov.

(B) Dividends paid mid-Jan., Apr., July, and Oct. ■ Dividend reinvestment plan avail. † Shareholder investment plan avail. (C) Incl. deferred charges. In '15: \$5.90/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate allowed on com. eq. in '16: 9.6%; earned on avg. com. eq. '15: 8.3%. Regulatory Climate: Average. (F) '05 per-share data are pro forma, based on shares outstanding when stock began trading in '06.

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RECENT PRICE	42.05	P/E RATIO	14.0 (Trailing: 14.8 Median: 13.0)	RELATIVE P/E RATIO	0.78	DIV'D YLD	4.1%	VALUE LINE
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[illegible]

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
22.83	23.84	18.62	23.54	23.09	24.74	24.07	25.28	27.94	24.57	23.31	22.42	19.33	19.71	21.52	20.61	18.30	18.60	Revenues per sh	20.75
2.71	3.14	3.01	2.92	3.02	3.42	3.91	4.36	4.68	4.98	5.27	5.36	4.87	5.17	5.82	6.15	5.85	6.15	"Cash Flow" per sh	7.25
1.78	1.85	1.88	1.88	1.52	1.79	1.85	2.59	2.90	3.08	3.07	3.11	2.44	2.45	2.99	3.30	2.75	2.85	Earnings per sh ^A	3.25
1.08	1.08	1.08	1.08	1.10	1.12	1.14	1.17	1.29	1.33	1.37	1.37	1.42	1.44	1.48	1.56	1.64	1.72	Div'd Decl'd per sh ^{B+†}	2.00
2.31	4.99	4.03	2.86	2.64	2.04	2.01	2.65	3.50	3.55	4.27	4.12	5.09	5.56	5.58	7.65	7.30	6.90	Cap'l Spending per sh	5.00
9.61	10.05	8.85	11.71	12.05	11.99	13.35	14.35	15.36	17.37	19.04	20.30	21.31	22.95	24.09	25.86	26.00	26.05	Book Value per sh ^C	29.75
415.94	411.68	450.53	472.27	476.20	502.33	505.29	508.52	506.02	505.99	505.97	505.95	505.89	505.86	505.84	505.28	506.00	506.00	Common Shs Outst'g ^D	506.00
10.3	12.0	10.0	10.6	14.3	16.5	17.8	16.5	13.6	10.0	10.4	10.4	12.8	13.5	12.6	12.4	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	15.5
.67	.61	.55	.60	.76	.88	.96	.88	.82	.67	.66	.65	.81	.76	.66	.63			Relative P/E Ratio	.95
5.9%	4.9%	5.7%	5.4%	5.1%	3.8%	3.5%	2.7%	3.3%	4.3%	4.3%	4.2%	4.6%	4.4%	3.9%	3.8%			Avg Ann'l Div'd Yield	4.0%
CAPITAL STRUCTURE as of 9/30/16						12164	12853	14139	12431	11793	11343	9781.0	9968.0	10886	10415	9250	9400	Revenues (\$mill)	10450
Total Debt \$10952 mill. Due in 5 Yrs \$3755 mill.						934.0	1323.0	1477.0	1567.0	1557.0	1577.0	1239.0	1243.0	1518.0	1679.0	1400	1465	Net Profit (\$mill)	1660
LT Debt \$10697 mill. LT Interest \$428 mill.						36.6%	44.5%	45.9%	42.3%	40.5%	40.4%	36.2%	39.5%	38.2%	37.4%	36.5%	37.0%	Income Tax Rate	37.0%
(LT interest earned: 7.6x)						4.7%	2.7%	3.2%	3.8%	5.5%	2.7%	4.8%	4.6%	4.5%	5.5%	5.0%	5.0%	AFUDC % to Net Profit	4.0%
Leases, Uncapitalized Annual rentals \$29 mill.						60.3%	54.0%	50.5%	46.3%	44.8%	42.1%	38.3%	40.4%	40.4%	40.3%	42.0%	43.5%	Long-Term Debt Ratio	46.0%
						39.2%	45.5%	49.0%	53.2%	55.2%	57.9%	61.7%	59.6%	59.6%	59.7%	58.0%	56.5%	Common Equity Ratio	54.0%
Pension Assets-12/15 \$5039 mill.						17197	16041	15856	16513	17452	17731	17467	19470	20446	21900	22575	23325	Total Capital (\$mill)	27900
Oblig \$5522 mill.						13002	13275	14433	15440	16390	17849	19736	21645	23589	26539	28400	29750	Net Plant (\$mill)	32300
Pfd Stock None						7.7%	10.4%	11.2%	11.0%	10.4%	10.2%	8.1%	7.5%	8.4%	8.6%	7.0%	7.0%	Return on Total Cap'l	7.0%
						13.7%	17.9%	18.8%	17.7%	16.2%	15.4%	11.5%	10.7%	12.5%	12.9%	10.5%	11.0%	Return on Shr. Equity	11.0%
Common Stock 505,896,218 shs.						13.8%	18.1%	19.0%	17.8%	16.2%	15.4%	11.5%	10.7%	12.5%	12.9%	10.5%	11.0%	Return on Com Equity ^E	11.0%
as of 10/18/16																			
MARKET CAP: \$21 billion (Large Cap)						5.3%	9.9%	10.5%	10.1%	9.0%	8.6%	4.8%	4.4%	6.3%	6.8%	4.5%	4.5%	Retained to Com Eq	4.5%
ELECTRIC OPERATING STATISTICS						62%	45%	45%	43%	45%	44%	58%	59%	49%	47%	59%	59%	All Div'ds to Net Prof	61%

	2013	2014	2015	
% Change Retail Sales (KWH)	-9	-1.3	+2.4	BUSINESS: Public Service Enterprise Group Incorporated is a holding company for Public Service Electric and Gas Company (PSE&G), which serves 2.2 million electric and 1.8 million gas customers in New Jersey, and PSEG Power LLC, a nonregulated power generator with nuclear, gas, and coal-fired plants in the Northeast. PSEG Energy Holdings is involved in renewable energy.
Avg. Indust. Use (MWH)	NA	NA	NA	The company no longer breaks out data on electric and gas operating statistics. Fuel costs: 31% of revenues. '15 reported depreciation rate (utility): 2.5%. Has 12,700 employees. Chairman, President & Chief Executive Officer: Dr. Ralph Izzo. Inc.: New Jersey.
Avg. Indust. Revs. per KWH(¢)	NA	NA	NA	Address: 80 Park Plaza, P.O. Box 1171, Newark, New Jersey 07101-1171. Telephone: 973-430-7000. Internet: www.pseg.com.
Capacity at Peak (mw)	NA	NA	NA	
Peak Load, Summer (mw)	10414	9474	9595	
Annual Load Factor (%)	NA	NA	NA	
% Chance Customers (avg.)	NA	NA	NA	

We have revised our 2016 and 2017 earnings estimates for Public Service Enterprise Group. We raised our 2016 estimate by \$0.15 a share, reflecting a better-than-expected third quarter. A hotter-than-normal summer was a plus, and PSEG recorded mark-to-market accounting gains in the period, which we *include* in our presentation because these are ongoing. On the other hand, we have cut our 2017 forecast by \$0.15 a share. Low gas prices are hurting PSEG Power, the company's main nonutility subsidiary. This results in lower margins and lower output from PSEG Power's coal-fired generating units.

Public Service Electric and Gas is expanding its rate base. PSE&G is undertaking some storm-hardening capital spending that was prompted by Hurricane Sandy in the fall of 2012. Most of this spending is recoverable in rates concurrently. (The utility will still have to file a general rate case in November of 2017.) Electric transmission is another key growth area for PSE&G. It asked the Federal Energy Regulatory Commission for a \$121 million rate hike, effective at the

Fixed Charge Cov. (%)	529	635	705
ANNUAL RATES	Past	Past	Est'd '13-'15
of change (per sh)	10 Yrs.	5 Yrs.	to '19-'21
Revenues	-1.5%	-4.0%	Nil
"Cash Flow"	6.0%	3.0%	4.0%
Earnings	5.5%	-5%	2.0%
Dividends	3.0%	2.5%	5.0%
Book Value	7.5%	7.0%	3.5%

Cal- endar	QUARTERLY REVENUES (\$ mil.)				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	2786	2310	2554	2318	9968.0
2014	3223	2249	2641	2773	10886
2015	3135	2314	2688	2278	10415
2016	2616	1905	2450	2279	9250
2017	2700	1950	2500	2250	9400

Calendar	EARNINGS PER SHARE ^A				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2013	.63	.66	.77	.39	2.45
2014	.76	.42	.87	.94	2.99
2015	1.15	.68	.87	.60	3.30
2016	.93	.37	.94	.51	2.75
2017	.95	.60	.80	.50	2.85

Company's Financial Strength	A++
Stock's Price Stability	95
Price Growth Persistence	20
Earnings Predictability	70

SCANA CORP. NYSE-SCG				RECENT PRICE	73.26	P/E RATIO	17.5	(Trailing: 18.4 Median: 14.0)	RELATIVE P/E RATIO	0.97	DIV'D YLD	3.3%	VALUE LINE			
TIMELINESS	2	Lowered 10/14/16	High: 43.7	42.4	45.5	44.1	38.6	42.0	45.5	50.3	54.4	63.4	65.6	76.4	Target Price	Range
SAFETY	2	Lowered 9/10/99	Low: 36.6	36.9	32.9	27.8	26.0	34.2	34.6	43.3	44.7	45.6	49.9	59.5	2019	2020
TECHNICAL	3	Lowered 11/11/16	LEGENDS												2021	
BETA	.70	(1.00 = Market)	0.71 x Dividends p sh divided by Interest Rate												128	
2019-21 PROJECTIONS		 Relative Price Strength												96	
Ann'l Total Return			Options: Yes												80	
Price Gain			Shaded area indicates recession												64	
High Low															48	
80 (+10%) 6%															40	
60 (-20%) -1%															32	
Insider Decisions															24	
J F M A M J J A S															16	
to Buy 0 0 0 0 0 0 0 0															12	
Options 2 0 0 2 0 1 2 2 0																
to Sell 0 1 0 0 0 0 0 0																
Institutional Decisions																
4Q2015 1Q2016 2Q2016																
to Buy 205 255 241																
to Sell 181 172 203																
Hld's(000) 83873 95492 93877																
Percent shares traded																
21 14 7																

RECENT PRICE	105.06	P/E RATIO	25.8 (Trailing: 22.3 Median: 13.0)	RELATIVE P/E RATIO	1.40	DIV'D YLD	3.1%	VALUE LINE
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TIMELINESS	3	Lowered 10/28/16
SAFETY	2	Raised 7/29/16
TECHNICAL	2	Lowered 9/30/16
BETA	.80	(1.00 = Market)

High:	47.9	57.3
Low:	35.5	42.9

LEGENDS

— 0.97 x Dividends p sh
divided by Interest Rate

.... Relative Price Strength

Options: Yes

Shaded area indicates recession

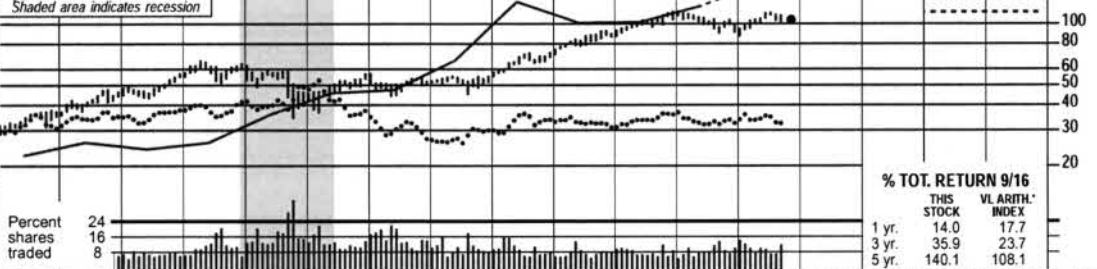
2019-21 PROJECTIONS

	Price	Gain	Ann'l To Return
High	155	(+50%)	13%
Low	115	(+10%)	6%

	D	J	F	M	A	M	J	J
to Buy	0	0	0	0	0	0	0	0
Options	0	5	0	1	0	4	1	1
to Sell	0	2	0	2	0	1	1	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	265	270	280
to Sell	244	254	244
Hld's(000)	185015	203184	199666



2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
35.38	39.27	29.38	34.81	40.18	45.64	44.89	43.79	44.21	32.88	37.44	41.83	39.80	43.18	44.80	41.20	39.05	39.90	Revenues per sh	48.25
4.91	5.39	5.71	5.56	6.58	5.96	6.74	6.93	7.40	7.94	7.76	8.58	8.92	8.87	9.41	10.32	9.20	10.95	"Cash Flow" per sh	14.50
2.06	2.55	2.79	3.01	3.93	3.52	4.23	4.26	4.43	4.78	4.02	4.47	4.35	4.22	4.63	5.23	3.80	5.15	Earnings per sh ^A	7.50
1.00	1.00	1.00	1.00	1.00	1.16	1.20	1.24	1.37	1.56	1.56	1.92	2.40	2.52	2.64	2.80	3.02	3.28	Div'd Decl'd per sh ^B	4.00
3.76	5.22	5.92	4.63	4.62	5.46	7.28	7.70	8.47	7.76	8.58	11.85	12.20	10.52	12.68	12.71	14.15	10.30	Cap'l Spending per sh	11.25
12.35	13.17	13.79	17.17	20.78	23.95	28.66	31.87	32.75	36.54	37.54	41.00	42.42	45.03	45.98	47.56	47.95	49.70	Book Value per sh ^C	54.75
201.90	204.48	204.91	226.60	234.18	257.19	262.01	261.21	243.32	246.51	240.45	239.93	242.37	244.46	246.33	248.30	251.00	253.00	Common Shs Outst'g ^D	242.00
9.4	9.7	8.2	9.0	8.6	11.8	11.5	14.0	11.8	10.1	12.6	11.8	14.9	19.7	21.9	19.7	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	18.0
.61	.50	.45	.51	.45	.63	.62	.74	.71	.67	.80	.74	.95	1.11	1.15	1.00			Relative P/E Ratio	1.15
5.2%	4.1%	4.4%	3.7%	2.9%	2.8%	2.5%	2.1%	2.6%	3.2%	3.1%	3.6%	3.7%	3.0%	2.6%	2.7%			Avg Ann'l Div'd Yield	3.0%
CAPITAL STRUCTURE as of 6/30/16						11761	11438	10758	8106.0	9003.0	10036	9647.0	10557	11035	10231	9800	10100	Revenues (\$/mill)	11650
Total Debt \$15862 mill. Due in 5 Yrs \$6769 mill.						1118.0	1135.0	1123.0	1193.0	1008.0	1088.0	1079.0	1060.0	1162.0	1314.0	1010	1410	Net Profit (\$/mill)	1960
LT Debt \$13178 mill. LT Interest \$566 mill.						31.3%	33.6%	29.2%	30.5%	26.5%	25.3%	18.2%	26.5%	19.7%	19.2%	29.5%	29.0%	Income Tax Rate	28.0%
Incl. \$245 mill. capitalized leases. (LT interest earned: 3.4x)						7.2%	11.5%	13.2%	10.6%	11.3%	15.2%	17.2%	11.2%	14.4%	15.3%	21.0%	11.0%	AFUDC % to Net Profit	8.0%
						37.0%	34.8%	44.5%	44.8%	49.4%	50.4%	52.8%	50.5%	51.7%	52.6%	53.5%	54.0%	Long-Term Debt Ratio	58.0%
Leases, Uncapitalized Annual rentals \$71 mill.						61.4%	63.7%	54.2%	54.1%	49.6%	49.2%	46.7%	49.4%	48.2%	47.3%	46.5%	46.0%	Common Equity Ratio	42.0%
Pension Assets-12/15 \$2484 mill.						12229	13071	14692	16646	18186	20015	22002	22281	23513	24963	25975	27375	Total Capital (\$/mill)	31600
Oblig. \$3649 mill.						13175	14884	16865	18281	19876	23572	25191	25460	25902	28039	30250	31375	Net Plant (\$/mill)	34600
Pfd Stock \$20 mill. Pfd Div'd \$1.2 mill.						10.3%	9.6%	8.5%	8.3%	6.8%	6.7%	6.1%	6.0%	6.1%	6.4%	5.0%	6.5%	Return on Total Cap'l	7.5%
811,073 shs. 6% cum. \$25 par.						14.5%	13.3%	13.8%	13.0%	10.9%	10.9%	10.4%	9.6%	10.2%	11.1%	8.0%	10.5%	Return on Shr. Equity	14.0%
Common Stock 249,801,432 shs. as of 7/29/16						14.8%	13.5%	14.0%	13.1%	11.1%	11.0%	10.4%	9.6%	10.3%	11.1%	8.0%	10.5%	Return on Com Equity ^E	14.0%
MARKET CAP: \$26 billion (Large Cap)						11.0%	9.7%	9.7%	9.3%	7.0%	6.5%	5.1%	4.1%	5.0%	5.8%	1.5%	4.0%	Retained on Com Eq	6.5%
ELECTRIC OPERATING STATISTICS						26%	29%	31%	29%	37%	41%	52%	58%	52%	48%	79%	63%	All Div'ds to Net Prof	53%

	2013	2014	2015
% Change Retail Sales (KWH)	-1.3	+1.8	-1.0
Avg. Indust. Use (MWH)	4279	4543	4683
Avg. Indust. Revs. per KWH (¢)	13.10	16.55	17.58
Capacity at Peak (Mw)	NMF	NMF	NMF
Peak Load, Summer (Mw)	NMF	NMF	NMF
Annual Load Factor (%)	NMF	NMF	NMF
% Change Customers (y-r-end)	+5	+6	+7

BUSINESS: Sempra Energy is a holding co. for San Diego Gas & Electric Company, which sells electricity & gas mainly in San Diego County, & Southern California Gas Company, which distributes gas to most of Southern California. Customers: 1.4 mill. electric, 6.6 mill. gas. Elec. rev. breakdown: residential, 41%; commercial, 42%; industrial, 10%; other, 7%. Purchases most of its power; the rest is

gas. Has subs. in gas pipeline & storage, power generation, & liquefied natural gas. Sold commodities business in '10. Power costs: 37% of revs. '15 reported deprec. rates: 2.7%-5.7%. Has 17,400 employees. Chairman and CEO: Debra L. Reed. President: Mark A. Snell. Inc.: CA. Address: 488 8th Avenue, San Diego, CA 92101. Tel.: 619-696-2000. Internet: www.sempra.com.

Sempre Energy is investing in Mexico

Sempra Energy is investing in Mexico. The company's Mexico subsidiary, IEnova, paid \$1.1 billion for its partner's 50% stake in a midstream gas joint venture. IEnova raised the funds through a \$1.6 billion sale of common stock. Separately, IEnova is spending \$1 billion on renewable-energy projects and has bids pending for an electric transmission project (estimated investment of \$1.2 billion) and a gas pipeline (estimated investment of \$600 million). IEnova is also selling a gas-fired power plant, but will have to take a nonrecurring charge estimated at \$0.16-\$0.29 a share against third-quarter results because the facility's market value is below its book value.

The company has had some transactions in the United States, too. In the second quarter, Sempra completed the sale of its 25% stake in the Rockies Express pipeline, raising \$443 million in cash. Related to the sale, the company booked a \$123 million aftertax loss (*included in our earnings presentation*) in the quarter stemming from the permanent release of pipeline capacity. It had already taken a \$27 million aftertax writedown in the first

period. In the third quarter, Sempra sold its gas utilities in the Southeast for \$323 million. It expects to record an aftertax gain of about \$70 million. Also in the third period, the company paid \$22 million for a windfarm that is under development in Michigan.

Despite a probable bottom-line downturn in 2016, Semptra's long-term prospects for earnings growth are good
The aforementioned \$123 million loss is a negative factor in this year's results. However, Semptra's nonutility investments will boost the company's earning power, and the income of its utilities rises as their rate base expands. Most notably, however, a project to turn a liquefied natural gas import terminal to an export facility is on budget and on schedule for completion in 2018. Net profit from this is projected at \$300 million-\$350 million in 2019, the first full year of operation.

Sempra stock offers strong dividend growth potential over the 3- to 5-year period. This should produce a long-term total return that compares favorably with other utilities.

Paul E. Debbas, CFA October 28, 2016

Company's Financial Strength	A
Stock's Price Stability	100
Price Growth Persistence	85
Earnings Predictability	90

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	2010	2009	2008	2007	2006	2005
(A) Dil. EPS. Excl. nonrec. gains (losses):	'05, 17¢; '06, (6¢); '09, (26¢); '10, (\$1.05); '11, \$1.15; '12, (98¢); '13, (30¢); '15, 14¢; '16, (20¢); gain (losses) from disc. ops.: '04, (10¢);					'05, 17¢; '06, (6¢); '09, (26¢); '10, (\$1.05); '11, \$1.15; '12, (98¢); '13, (30¢); '15, 14¢; '16, (20¢); gain (losses) from disc. ops.: '04, (10¢);
(B) Div. per share:						

4¢); '06, \$1.21; '07, (10¢). '14 EPS don't
due to rounding. Next eggs. due early Nov.
Div'ds paid mid-Jan., Apr., July & Oct. ■
reinv. plan avail. (C) Incl. intang. In '15:

\$18.11/sh. (D) In mill. (E) Rate base: Net orig. cost. Rate allowed on com. eq.: SDG&E in '13: 10.3%; SoCalGas in '13: 10.1%; earn. on avg. com. eq., '15: 11.2%. Regul. Climate: Average

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VECTREN CORP. NYSE-WVC										RECENT PRICE	49.79	P/E RATIO	20.0	(Trailing: 22.2 Median: 16.0)	RELATIVE P/E RATIO	1.06	DIV'D YLD	3.3%	VALUE LINE
TIMELINESS	3	Lowered 7/22/16	High: 29.5	29.3	30.5	32.2	26.9	27.8	30.7	30.8	37.9	48.3	49.5	53.3					Target Price Range 2019 2020 2021
SAFETY	2	Lowered 1/5/01	Low: 25.0	25.2	24.8	19.5	18.1	21.7	23.7	27.5	29.5	34.6	37.3	39.4					
TECHNICAL	1	Raised 8/19/16	LEGENDS — 1.00 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession																
BETA	.75	(1.00 = Market)																	
2019-21 PROJECTIONS																			
Price	60	Gain (+20%)	Ann'l Total Return	8%	1%														
High	60	45	10	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Low	45	10	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Insider Decisions																			
N	D	J	F	M	A	M	J	J											
to Buy	0	1	0	0	0	0	0	0	0										
Options	0	0	11	0	0	0	0	0	0										
to Sell	0	0	0	0	0	0	0	0	0										
Institutional Decisions																			
4Q2015	1Q2016	2Q2016	Percent shares traded	12	8	4													
to Buy	110	153	151																
to Sell	131	111	112																
Hlds(000)	50862	53480	52315																
Vectren was formed on March 31, 2000 through the merger of Indiana Energy and SIGCORP. The merger was consummated with a tax-free exchange of shares and has been accounted for as a pooling of interests. Indiana Energy common stockholders received one Vectren common share for each share held. SIGCORP stockholders exchanged each common share for 1.333 common shares of Vectren.																			
CAPITAL STRUCTURE as of 6/30/16																			
Total Debt \$1758.7 mill. Due in 5 Yrs \$350.0 mill.																			
LT Debt \$1713.5 mill. LT Interest \$84.0 mill.																			
(LT interest earned: 4.4x)																			
Pension Assets-12/15 \$296.9 mill.																			
Oblig. \$348.3 mill.																			
Pfd Stock None																			
Common Stock 82,835,860 shs. as of 7/29/16																			
MARKET CAP: \$4.1 billion (Mid Cap)																			
ELECTRIC OPERATING STATISTICS																			
										2013	2014	2015							
% Change Retail Sales (KWH)										+3	+2.0	-2.4							
Avg. Indust. Use (MWH)										NA	NA	NA							
Avg. Indust. Revs. per KWH (\$)										NA	NA	NA							
Capacity at Peak (MW)										1384	1407	1357							
Peak Load, Summer (MW)										1102	1095	1088							
Annual Load Factor (%)										NA	NA	NA							
% Change Customers (yr-end)										+6	+6	+7							
Fixed Charge Cov. (%)										380	363	428							
ANNUAL RATES										Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21							
Revenues										2.5%	2.0%	4.0%							
"Cash Flow"										4.5%	4.5%	7.0%							
Earnings										2.5%	3.5%	9.0%							
Dividends										2.5%	2.0%	5.0%							
Book Value										3.0%	2.5%	5.0%							
Cal-endar																			
QUARTERLY REVENUES (\$ mill.)										Mar.31	Jun.30	Sep.30	Dec.31	Full Year					
2013										700.6	531.0	579.6	680.0	2491.2					
2014										796.8	542.5	595.6	676.8	2611.7					
2015										706.2	551.0	573.5	604.0	2434.7					
2016										584.8	533.7	610	651.5	2380					
2017										650	600	650	700	2600					
Cal-endar																			
EARNINGS PER SHARE ^A										Mar.31	Jun.30	Sep.30	Dec.31	Full Year					
2013										.61	d.07	.52	.60	1.66					
2014										.62	.14	.57	.69	2.02					
2015										.69	.43	.48	.79	2.39					
2016										.58	.39	.63	.85	2.45					
2017										.62	.45	.68	.90	2.65					
Cal-endar																			
QUARTERLY DIVIDENDS PAID ^B										Mar.31	Jun.30	Sep.30	Dec.31	Full Year					
2012										.350	.350	.350	.355	1.41					
2013										.355	.355	.355	.360	1.43					
2014										.360	.360	.360	.380	1.46					
2015										.380	.380	.380	.400	1.54					
2016										.400	.400	.400							
2017																			
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(A) Diluted EPS. Excl. nonrecr. gain (loss): '09, 15¢. Next eps report due early November. (B) Div's historically paid in early March, June, September, and December. (C) Incl. intang. In '15, \$6.66/sh. (D) In millions. (E) Electric rate base determination: fair value. Rates allowed on elect. common equity range from 10.15% to 10.4%. Regulatory Climate: Above Average.

Company's Financial Strength A
 Stock's Price Stability 95
 Price Growth Persistence 70
 Earnings Predictability 80

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WESTAR ENERGY NYSE-WR										RECENT PRICE	55.28	P/E RATIO	21.9	(Trailing: 24.9 Median: 14.0)	RELATIVE P/E RATIO	1.16	DIV'D YLD	2.7%	VALUE LINE					
TIMELINESS — Suspended 6/10/16										High: 25.0	27.2	28.6	25.9	22.3	25.9	29.0	33.0	35.0	43.2	44.0	57.2		Target Price Range	
SAFETY 2 Raised 4/1/05										Low: 21.1	20.1	22.8	16.0	14.9	20.6	22.6	26.8	28.6	31.7	33.9	40.0		2019 2020 2021	
TECHNICAL — Suspended 6/10/16										LEGENDS														
BETA .70 (1.00 = Market)										0.80 x Dividends p sh														
										divided by Interest Rate														
									 Relative Price Strength														
										Options: Yes														
										Shaded area indicates recession														
2019-21 PROJECTIONS																								
Ann'l Total																								
Price 55 Gain (Nil) Ann'l Total Return 3%																								
High 40 Low 40 (-30%) -4%																								
Insider Decisions																								
N D J F M A M J J																								
to Buy 0 0 0 0 0 0 0 0																								
Options 1 0 16 8 0 0 0 0																								
to Sell 2 0 0 0 2 0 0 0																								
Institutional Decisions																								
4Q2015 1Q2016 2Q2016																								
to Buy 171 168 218																								
to Sell 117 167 174																								
Hlds(000) 100287 100238 99811																								
Percent shares traded 24 16 8																								

(A) EPS diluted from 2010 onward. Excl. non-recur. gains (losses): '00, \$1.07; '01, 27¢; '02, (\$12.06); '03, 77¢; '08, 39¢; '11, 14¢. Earnings may not sum due to rounding. Next earnings report due late November.

(B) Div'ds paid in early Jan., April, July, and Oct. ■ Div'd reinvest. plan avail. † Shareholder invest. plan avail. (C) Incl. reg. assets. In 2015: \$5.31/sh. (D) Rate base determined: fair value; Rate allowed on common equity in '15: 10.0%; earned on avg. com. eq., '15: 9.5%. Regul. Clim.: Avg. (E) In mill.

Company's Financial Strength A
 Stock's Price Stability 95
 Price Growth Persistence 75
 Earnings Predictability 85

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XCEL ENERGY NYSE-XEL				RECENT PRICE	40.54	P/E RATIO	17.9	(Trailing: 19.2 Median: 15.0)	RELATIVE P/E RATIO	0.97	DIV'D YLD	3.5%	VALUE LINE						
TIMELINESS	2	Lowered 9/30/16	High: 20.2	20.2	23.6	25.0	22.9	21.9	24.4	27.8	29.9	31.8	37.6	38.3	45.4	Target Price Range 2019 2020 2021			
SAFETY	1	Raised 5/1/15	Low: 16.5	16.5	17.8	19.6	15.3	16.0	19.8	21.2	25.8	26.8	27.3	31.8	35.2				
TECHNICAL	3	Lowered 10/28/16	LEGENDS 0.71 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession																
BETA	.60	(1.00 = Market)																	
2019-21 PROJECTIONS																			
Price	45	Gain (+10%)	Ann'l Total Return																
Low	40	(Nil)	6%																
Insider Decisions																			
to Buy			D J F M A M J J A																
Options			to Buy 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																
to Sell			to Sell 0 0 12 0 0 0 0 0 0 0 0 0 0 0 0 0																
Institutional Decisions																			
to Buy			4Q2015 1Q2016 2Q2016																
to Sell			261 292 306																
Hld's(000)			363202 370041 364911																
Percent shares traded			15 10 5																
% TOT. RETURN 9/16			THIS STOCK 20.2 17.7 INDEX 66.3 23.7 1 yr. 97.2 108.1																
© VALUE LINE PUB. LLC 19-21																			
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Revenues per sh	23.25
34.11	43.56	23.89	19.90	20.84	23.86	24.16	23.40	24.69	21.08	21.38	21.90	20.76	21.92	23.11	21.72	21.25	21.65	"Cash Flow" per sh	6.25
4.12	5.09	3.14	3.35	3.27	3.28	3.61	3.45	3.50	3.48	3.51	3.79	4.00	4.10	4.28	4.56	5.05	5.30	Earnings per sh	2.75
1.60	2.27	.42	1.23	1.27	1.20	1.35	1.35	1.46	1.49	1.56	1.72	1.85	1.91	2.03	2.10	2.20	2.30	Div'd Decl'd per sh	1.70
1.48	1.50	1.13	.75	.81	.85	.88	.91	.94	.97	1.00	1.03	1.07	1.11	1.20	1.28	1.36	1.44	Cap'l Spending per sh	5.75
3.63	7.40	6.04	2.49	3.19	3.25	4.00	4.89	4.66	3.91	4.60	4.53	5.27	6.82	6.33	7.26	6.00	5.85	Book Value per sh	25.50
16.37	17.95	11.70	12.95	12.99	13.37	14.28	14.70	15.35	15.92	16.76	17.44	18.19	19.21	20.20	20.89	21.70	22.60	Common Shs Outst'g	508.00
339.79	345.02	398.71	398.96	400.46	403.39	407.30	428.78	453.79	457.51	482.33	486.49	487.96	497.97	505.73	507.54	508.00	508.00		
14.3	12.4	NMF	11.6	13.6	15.4	14.8	16.7	13.7	12.7	14.1	14.2	14.8	15.0	15.4	16.5	16.5	16.5	Avg Ann'l P/E Ratio	15.5
.93	.64	NMF	.66	.72	.82	.80	.89	.82	.85	.90	.89	.94	.84	.81	.84	.81	.81	Relative P/E Ratio	.95
6.4%	5.3%	6.6%	5.2%	4.7%	4.6%	4.4%	4.0%	4.7%	5.1%	4.5%	4.2%	3.9%	3.9%	3.8%	3.7%	3.7%	3.7%	Avg Ann'l Div'd Yield	4.0%
CAPITAL STRUCTURE as of 6/30/16																			
Total Debt \$14262 mill. Due in 5 Yrs \$5011.0 mill.						9840.3	10034	11203	9644.3	10311	10655	10128	10915	11686	11024	10800	11000	Revenues (\$mill)	11750
LT Debt \$13105 mill. LT Interest \$602.8 mill.						568.7	575.9	645.7	685.5	727.0	841.4	905.2	948.2	1021.3	1063.6	1115	1175	Net Profit (\$mill)	1400
Incl. \$164.0 mill. capitalized leases. (LT interest earned: 3.8x)						24.2%	33.8%	34.4%	35.1%	37.5%	35.8%	33.2%	33.8%	33.9%	35.8%	35.0%	35.0%	Income Tax Rate	35.0%
						9.8%	12.5%	15.9%	16.8%	11.7%	9.4%	10.8%	13.4%	12.5%	7.7%	6.0%	6.0%	AFUDC % to Net Profit	5.0%
						52.1%	49.7%	52.2%	51.6%	53.1%	51.1%	53.3%	53.3%	53.0%	54.1%	55.0%	54.0%	Long-Term Debt Ratio	52.5%
Leases, Uncapitalized Annual rentals \$241.6 mill.						47.0%	49.4%	47.1%	47.7%	46.3%	48.9%	46.7%	46.7%	47.0%	45.9%	45.0%	46.0%	Common Equity Ratio	47.5%
Pension Assets-12/15 \$2883.8 mill. Oblig. \$3567.9 mill.						12371	12748	14800	15277	17452	17331	19018	20477	21714	23092	24475	24875	Total Capital (\$mill)	27500
Pfd Stock None						15549	16676	17689	18508	20663	22353	23809	26122	28757	31206	32825	34275	Net Plant (\$mill)	38400
						6.2%	6.3%	6.0%	6.2%	5.7%	6.5%	6.1%	6.0%	6.0%	5.8%	6.0%	6.0%	Return on Total Cap'l	6.5%
						9.6%	9.0%	9.1%	9.3%	8.9%	9.9%	10.2%	9.9%	10.0%	10.0%	10.0%	10.5%	Return on Shr. Equity	11.0%
Common Stock 507,952,795 shs. as of 8/1/16						9.7%	9.1%	9.2%	9.4%	8.9%	9.9%	10.2%	9.9%	10.0%	10.0%	10.0%	10.5%	Return on Com Equity	11.0%
MARKET CAP: \$21 billion (Large Cap)						3.6%	3.1%	3.8%	3.7%	3.6%	4.3%	4.7%	4.5%	4.5%	4.3%	4.0%	4.0%	Retained to Com Eq	4.0%
						63%	66%	59%	61%	59%	56%	54%	54%	55%	57%	62%	62%	All Div'ds to Net Prof	62%
ELECTRIC OPERATING STATISTICS																			
						2013	2014	2015											
% Change Retail Sales (KWH)						+3	+2	-6											
Large C & I Use (MWH)						23875	24475	23521											
Large C & I Revs. per KWH (¢)						6.23	6.47	6.10											
Capacity at Peak (Mw)						NA	NA	NA											
Peak Load, Summer (Mw)						21258	21429	19583											
Annual Load Factor (%)						NA	NA	NA											
% Change Customers (yr-end)						+8	+9	+9											
Fixed Charge Cov. (%)						321	344	358											
ANNUAL RATES																			
Past 10 Yrs.						Past 5 Yrs.	Est'd '13-'15 to '19-'21												
Revenues						5.5%	5.5%	5.5%											
"Cash Flow"						2.5%	4.5%	6.5%											
Earnings						5.0%	6.0%	5.5%											
Dividends						4.0%	4.5%	6.0%											
Book Value						4.5%	4.5%	4.0%											
QUARTERLY REVENUES (\$mill.)																			
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year														
2013	2783	2579	2822	2731	10915														
2014	3203	2685	2870	2928	11686														
2015	2962	2515	2902	2645	11024														
2016	2772	2500	2928	2600	10800														
2017	2800	2550	3000	2650	11000														
EARNINGS PER SHARE																			
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year														
2013	.48	.40	.73	.30	1.91														
2014	.52	.39	.73	.39	2.03														
2015	.46	.39	.84	.41	2.10														
2016	.47	.39	.89	.45	2.20														
2017	.54	.40	.90	.46	2.30														
QUARTERLY DIVIDENDS PAID																			
Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year														
2012	.26	.26	.27	.27	1.06														
2013	.27	.27	.28	.28	1.10														
2014	.28	.30	.30	.30	1.18														
2015	.30	.32	.32	.32	1.26														
2016	.32	.34	.34	.34															
(A) Diluted EPS. Excl. nonrecurring gain (losses): '02, (\$6.27), '10, 5¢; '15, (16¢); gains (losses) on discontinued ops.: '03, 27¢; '04, (30¢); '05, 3¢; '06, 1¢; '09, (1¢); '10, 1¢. Next earnings report due early Nov. (B) Div'ds historically paid mid-Jan., Apr., July, and Oct. (C) Shareholder investment plan available. (D) Incl. in tangibles. In '15: \$5.63/sh. (E) Rate base: Varies. Rate allowed on com. eq. (blended): 9.8%; earned on avg. com. eq., '15: 9.5%. Regulatory Climate: Average.																			
Company's Financial Strength																			
Stock's Price Stability																			
Price Growth Persistence																			
Earnings Predictability																			
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2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



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Quote Lookup **60.74** +0.23 (+0.38 %)

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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
--	--------------	-----------	--------------	-----------

No. of Analysts	4	2	5	5
Avg. Estimate	0.97	0.73	3.12	3.52
Low Estimate	0.92	0.72	3.08	3.48
High Estimate	1	0.74	3.15	3.65
Year Ago EPS	1.25	0.41	3.06	3.12

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
--	--------------	-----------	--------------	-----------

No. of Analysts	1	1	3	3
Avg. Estimate	442M	330.5M	1.34B	1.39B
Low Estimate	442M	330.5M	1.25B	1.31B
High Estimate	442M	330.5M	1.46B	1.49B
Year Ago Sales	462.5M	380.6M	1.49B	1.34B
Sales Growth (year/est)	-4.40%	-13.20%	-9.60%	3.60%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
--	-----------	------------	-----------	-----------

EPS Est.	1.02	0.78	0.9	0.51
EPS Actual	1.25	0.41	0.93	0.5
Difference	0.23	-0.37	0.03	-0.01
Surprise %	22.50%	-47.40%	3.30%	-2.00%

EPS Trend	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.97	0.73	3.12	3.52
7 Days Ago	0.97	0.73	3.12	3.52
30 Days Ago	0.97	0.75	3.14	3.53
60 Days Ago	1	0.77	3.2	3.52
90 Days Ago	0.99	0.76	3.19	3.51

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates	ALE	Industry	Sector	S&P 500
Current Qtr.	-22.40%	3.23		
Next Qtr.	78.00%	-0.00		
Current Year	2.00%	1.70		
Next Year	12.80%	0.15		
Next 5 Years (per annum)	5.00%	0.07		
Past 5 Years (per annum)	6.57%	N/A		

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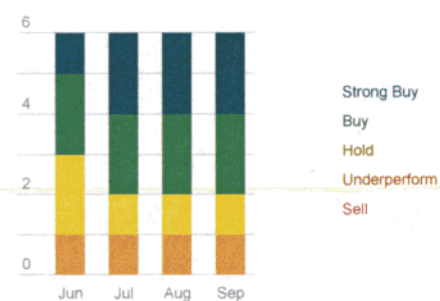


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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



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5,235.03

-9.54 (-0.18 %)



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Quote Lookup
38.77 +0.34 (+0.88 %) **38.77** 0.00 (0.00%)

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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	2	2	7	8
Avg. Estimate	0.93	0.16	1.89	2
Low Estimate	0.87	0.12	1.88	1.97
High Estimate	0.98	0.21	1.9	2.03
Year Ago EPS	0.8	0.16	1.73	1.89

Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	1	1	5	5
Avg. Estimate	1.45B	286.61M	3.36B	3.52B
Low Estimate	1.45B	286.61M	3.25B	3.41B
High Estimate	1.45B	286.61M	3.47B	3.59B
Year Ago Sales	898.9M	740.1M	3.25B	3.36B
Sales Growth (year/est)	61.30%	-61.30%	3.20%	4.70%

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.78	0.21	0.42	0.38
EPS Actual	0.8	0.16	0.43	0.37
Difference	0.02	-0.05	0.01	-0.01
Surprise %	2.60%	-23.80%	2.40%	-2.60%

EPS Trend

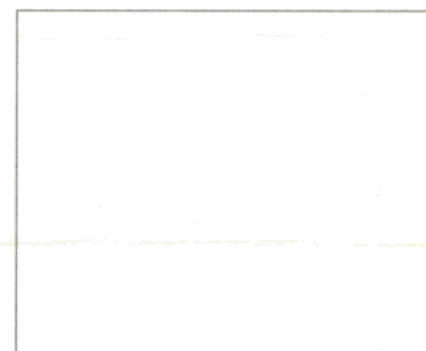
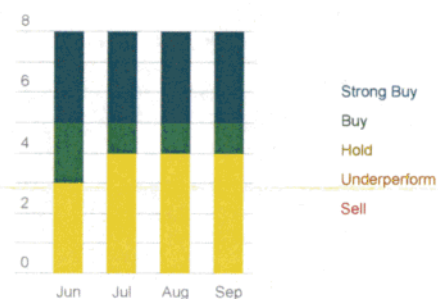
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.93	0.16	1.89	2
7 Days Ago	0.93	0.16	1.89	2
30 Days Ago	0.93	0.16	1.9	2
60 Days Ago	0.92	0.21	1.9	2.01
90 Days Ago	0.92	0.21	1.9	2.01

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	LNT	Industry	Sector	S&P 500
Current Qtr.	16.20%	3.23		
Next Qtr.	N/A	-0.00		
Current Year	9.20%	1.70		
Next Year	5.80%	0.15		
Next 5 Years (per annum)	6.60%	0.07		
Past 5 Years (per annum)	3.07%	N/A		

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S&P 500
2,139.12
 -0.04 (0.00 %)



Dow 30
18,120.17
 -3.63 (-0.02 %)



Nasdaq
5,235.03
 -9.54 (-0.18 %)



AEP is
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American Electric Power Co., Inc. (AEP) [Add to watchlist](#)

NYSE - NYSE Real Time Price. Currency in USD

Quote Lookup

65.42 +0.61 (+0.94 %) **65.42** 0.00 (0.00%)

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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	12	11	22	22
Avg. Estimate	1.12	0.63	3.69	3.83
Low Estimate	0.98	0.53	3.54	3.65
High Estimate	1.2	0.81	3.8	4
Year Ago EPS	1.06	0.48	3.69	3.69

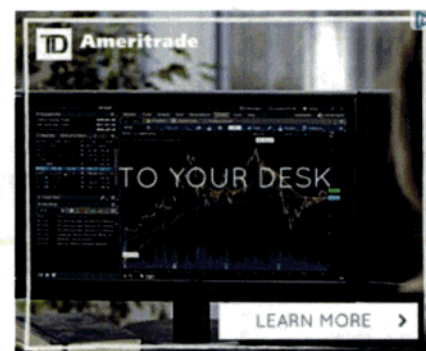
Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	8	7	15	15
Avg. Estimate	4.59B	3.97B	16.54B	16.79B
Low Estimate	4.3B	2.74B	15.26B	14.97B
High Estimate	4.88B	5.13B	18.62B	19.76B
Year Ago Sales	4.4B	3.61B	16.45B	16.54B
Sales Growth (year/est)	4.40%	9.70%	0.50%	1.50%

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.01	0.5	1.04	0.9
EPS Actual	1.06	0.48	1.02	0.95
Difference	0.05	-0.02	-0.02	0.05
Surprise %	5.00%	-4.00%	-1.90%	5.60%

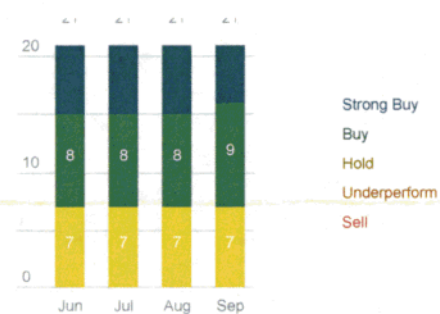
EPS Trend	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.12	0.63	3.69	3.83
7 Days Ago	1.12	0.63	3.69	3.83
30 Days Ago	1.12	0.63	3.69	3.83
60 Days Ago	1.1	0.66	3.67	3.84
90 Days Ago	1.1	0.66	3.67	3.84

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	2	1
Up Last 30 Days	N/A	N/A	3	2
Down Last 30 Days	N/A	N/A	1	2
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates	AEP	Industry	Sector	S&P 500
Current Qtr.	5.70%	3.23		
Next Qtr.	31.30%	-0.00		
Current Year	N/A	1.70		
Next Year	3.80%	0.15		
Next 5 Years (per annum)	2.31%	0.07		
Past 5 Years (per annum)	3.99%	N/A		



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Analyst Price Targets (17) >

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

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-3.63 (-0.02 %)



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Quote Lookup **50.04** +0.66 (+1.34 %) **50.04** 0.00 (0.00%)

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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	5	5	10	10
Avg. Estimate	1.36	0.18	2.54	2.76
Low Estimate	1.34	0.15	2.5	2.69
High Estimate	1.37	0.24	2.61	2.85
Year Ago EPS	1.41	0.12	2.56	2.54

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	5	5	10	10
Avg. Estimate	1.36	0.18	2.54	2.76
Low Estimate	1.34	0.15	2.5	2.69
High Estimate	1.37	0.24	2.61	2.85
Year Ago EPS	1.41	0.12	2.56	2.54

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	2	2	7	8
Avg. Estimate	1.88B	1.55B	6.24B	6.46B
Low Estimate	1.83B	1.37B	6.05B	6.21B
High Estimate	1.93B	1.74B	6.53B	6.61B
Year Ago Sales	1.83B	1.31B	6.1B	6.24B
Sales Growth (year/est)	2.40%	18.80%	2.30%	3.50%

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	2	2	7	8
Avg. Estimate	1.88B	1.55B	6.24B	6.46B
Low Estimate	1.83B	1.37B	6.05B	6.21B
High Estimate	1.93B	1.74B	6.53B	6.61B
Year Ago Sales	1.83B	1.31B	6.1B	6.24B
Sales Growth (year/est)	2.40%	18.80%	2.30%	3.50%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.3	0.16	0.38	0.52
EPS Actual	1.41	0.12	0.43	0.61
Difference	0.11	-0.04	0.05	0.09
Surprise %	8.50%	-25.00%	13.20%	17.30%

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.3	0.16	0.38	0.52
EPS Actual	1.41	0.12	0.43	0.61
Difference	0.11	-0.04	0.05	0.09
Surprise %	8.50%	-25.00%	13.20%	17.30%

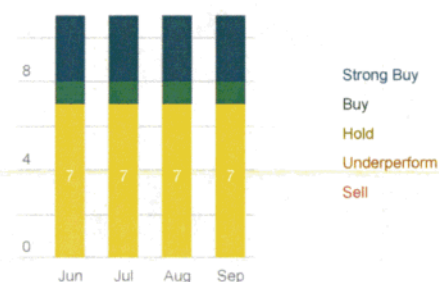
EPS Trend	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.36	0.18	2.54	2.76
7 Days Ago	1.36	0.18	2.54	2.76
30 Days Ago	1.36	0.18	2.54	2.76
60 Days Ago	1.37	0.2	2.51	2.78
90 Days Ago	1.36	0.2	2.51	2.78

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

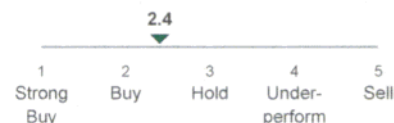
Growth Estimates	AEE	Industry	Sector	S&P 500
Current Qtr.	-3.50%	3.23		
Next Qtr.	50.00%	-0.00		
Current Year	-0.80%	1.70		
Next Year	8.70%	0.15		
Next 5 Years (per annum)	5.20%	0.07		
Past 5 Years (per annum)	-0.25%	N/A		



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Analyst Price Targets (7) >

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-0.04 (0.00 %)



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42.81 +0.48 (+1.13%) **42.81** 0.00 (0.00%)

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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	4	4	14	16
Avg. Estimate	0.55	0.43	2.02	2.18
Low Estimate	0.53	0.41	2.01	2.15
High Estimate	0.56	0.45	2.02	2.2
Year Ago EPS	0.53	0.38	1.89	2.02

Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	3	3	9	11
Avg. Estimate	1.65B	1.97B	6.9B	7.1B
Low Estimate	1.55B	1.72B	6.59B	6.69B
High Estimate	1.72B	2.41B	7.69B	7.81B
Year Ago Sales	1.49B	1.51B	6.46B	6.9B
Sales Growth (year/est)	11.30%	30.20%	6.80%	2.90%

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.49	0.38	0.59	0.36
EPS Actual	0.53	0.38	0.59	0.45
Difference	0.04	N/A	N/A	0.09

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	8.20%	N/A	N/A	25.00%

EPS Trend

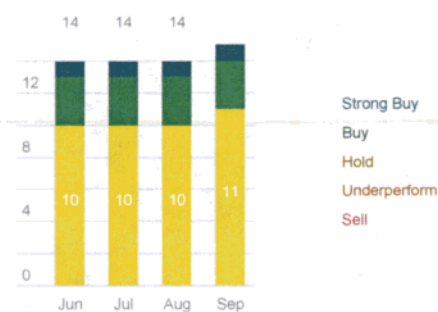
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.55	0.43	2.02	2.18
7 Days Ago	0.55	0.43	2.02	2.18
30 Days Ago	0.55	0.43	2.02	2.18
60 Days Ago	0.58	0.55	2.02	2.18
90 Days Ago	0.58	0.55	2.02	2.18

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	1	N/A
Up Last 30 Days	N/A	N/A	1	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	CMS	Industry	Sector	S&P 500
Current Qtr.	3.80%	3.23		
Next Qtr.	13.20%	-0.00		
Current Year	6.90%	1.70		
Next Year	7.90%	0.15		
Next 5 Years (per annum)	7.27%	0.07		
Past 5 Years (per annum)	8.22%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



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Quote Lookup
76.40 **+1.09 (+1.45 %)** **76.40** **0.00 (0.00 %)**

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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	8	8	16	19
Avg. Estimate	1.53	0.6	3.97	4.13
Low Estimate	1.39	0.5	3.83	3.93
High Estimate	1.65	0.67	4.05	4.25
Year Ago EPS	1.44	0.61	4.08	3.97

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	8	8	16	19
Avg. Estimate	1.53	0.6	3.97	4.13
Low Estimate	1.39	0.5	3.83	3.93
High Estimate	1.65	0.67	4.05	4.25
Year Ago EPS	1.44	0.61	4.08	3.97

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	3	3	12	13
Avg. Estimate	3.36B	2.63B	12.36B	12.59B
Low Estimate	3.12B	2.53B	11.6B	11.38B
High Estimate	3.5B	2.7B	13.05B	13.68B
Year Ago Sales	3.44B	2.71B	12.55B	12.36B
Sales Growth (year/est)	-2.40%	-2.90%	-1.60%	1.90%

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	3	3	12	13
Avg. Estimate	3.36B	2.63B	12.36B	12.59B
Low Estimate	3.12B	2.53B	11.6B	11.38B
High Estimate	3.5B	2.7B	13.05B	13.68B
Year Ago Sales	3.44B	2.71B	12.55B	12.36B
Sales Growth (year/est)	-2.40%	-2.90%	-1.60%	1.90%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.48	0.54	1.21	0.69
EPS Actual	1.44	0.61	1.18	0.59
Difference	-0.04	0.07	-0.03	-0.1

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.48	0.54	1.21	0.69
EPS Actual	1.44	0.61	1.18	0.59
Difference	-0.04	0.07	-0.03	-0.1

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-2.70%	13.00%	-2.50%	-14.50%

EPS Trend

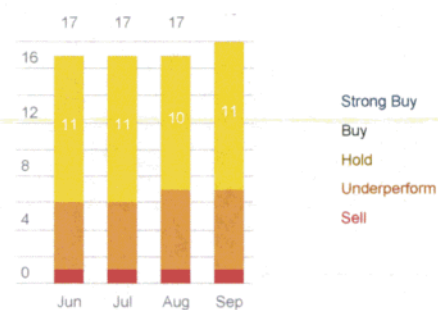
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.53	0.6	3.97	4.13
7 Days Ago	1.54	0.59	3.96	4.13
30 Days Ago	1.55	0.59	3.98	4.13
60 Days Ago	1.51	0.6	3.99	4.14
90 Days Ago	1.51	0.6	4	4.14

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	1	N/A	N/A
Up Last 30 Days	N/A	1	N/A	N/A
Down Last 30 Days	1	N/A	2	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	ED	Industry	Sector	S&P 500
Current Qtr.	6.30%	3.23		
Next Qtr.	-1.60%	-0.00		
Current Year	-2.70%	1.70		
Next Year	4.00%	0.15		
Next 5 Years (per annum)	1.98%	0.07		
Past 5 Years (per annum)	0.65%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



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NYSE - NYSE Real Time Price. Currency in USD

Quote Lookup
75.90 **+0.84 (+1.12 %)** **75.90** 0.00 (0.00 %)

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Currency in USD

Earnings Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	9	8	20	21
Avg. Estimate	1.11	1.01	3.78	3.86
Low Estimate	1.03	0.84	3.69	3.63
High Estimate	1.24	1.13	3.86	4.02
Year Ago EPS	1.03	0.7	3.44	3.78

Revenue Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	6	5	12	12
Avg. Estimate	3.25B	3.63B	12.39B	12.92B
Low Estimate	3.06B	2.78B	11.39B	11.94B
High Estimate	3.48B	4.6B	13.65B	14.12B
Year Ago Sales	2.97B	2.58B	11.73B	12.39B
Sales Growth (year/est)	9.50%	40.60%	5.60%	4.30%

Earnings History

9/29/2015 12/30/2015 3/30/2016 6/29/2016

EPS Est.	1.06	0.89	0.94	0.71
EPS Actual	1.03	0.7	0.96	0.71
Difference	-0.03	-0.19	0.02	N/A

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-2.80%	-21.30%	2.10%	N/A

EPS Trend

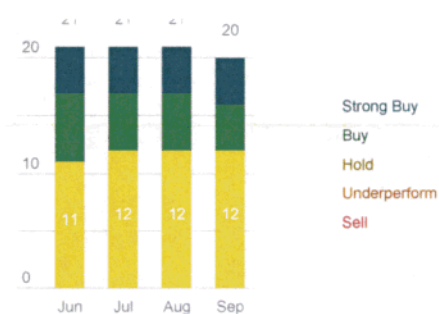
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.11	1.01	3.78	3.86
7 Days Ago	1.11	1.01	3.78	3.86
30 Days Ago	1.12	1	3.79	3.87
60 Days Ago	1.12	1.01	3.79	3.87
90 Days Ago	1.12	1	3.79	3.9

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	D	Industry	Sector	S&P 500
Current Qtr.	7.80%	3.23		
Next Qtr.	44.30%	-0.00		
Current Year	9.90%	1.70		
Next Year	2.10%	0.15		
Next 5 Years (per annum)	5.98%	0.07		
Past 5 Years (per annum)	4.03%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

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Quote Lookup

94.40 +0.84 (+0.90 %) **94.40** 0.00 (0.00 %)

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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	6	5	13	14
Avg. Estimate	1.39	1.2	5.07	5.28
Low Estimate	1.3	1.12	5.04	5.2
High Estimate	1.45	1.26	5.12	5.38
Year Ago EPS	1.4	1.01	4.82	5.07

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	3	3	6	7
Avg. Estimate	2.6B	2.82B	10.72B	11.08B
Low Estimate	2.52B	2.55B	9.91B	10.15B
High Estimate	2.73B	3.04B	11.53B	11.78B
Year Ago Sales	2.6B	2.49B	10.34B	10.72B
Sales Growth (year/est)	0.30%	13.30%	3.70%	3.40%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.25	0.99	1.5	0.89
EPS Actual	1.4	1.01	1.52	0.98
Difference	0.15	0.02	0.02	0.09

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	12.00%	2.00%	1.30%	10.10%

EPS Trend

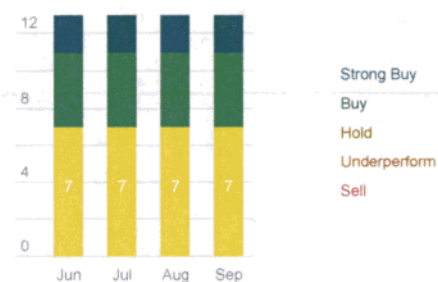
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.39	1.2	5.07	5.28
7 Days Ago	1.39	1.2	5.07	5.28
30 Days Ago	1.39	1.2	5.07	5.27
60 Days Ago	1.36	1.17	4.95	5.26
90 Days Ago	1.36	1.17	4.95	5.26

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	1
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	DTE	Industry	Sector	S&P 500
Current Qtr.	-0.70%	3.23		
Next Qtr.	18.80%	-0.00		
Current Year	5.20%	1.70		
Next Year	4.10%	0.15		
Next 5 Years (per annum)	5.35%	0.07		
Past 5 Years (per annum)	6.98%	N/A		

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S&P 500

2,139.12
 -0.04 (0.00 %)


Dow 30

18,120.17
 -3.63 (-0.02 %)


Nasdaq

5,235.03
 -9.54 (-0.18 %)

EIX
 gains
 0.60%

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NYSE - NYSE Real Time Price. Currency in USD

Quote Lookup
73.52 **+0.44 (+0.60 %)** **73.52** **0.00 (0.00%)**

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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	10	10	18	20
Avg. Estimate	1.22	0.93	3.89	4.14
Low Estimate	1.08	0.83	3.6	4.05
High Estimate	1.31	1.12	4	4.28
Year Ago EPS	1.16	0.88	4.1	3.89

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	6	6	12	14
Avg. Estimate	3.98B	3.16B	12.37B	12.75B
Low Estimate	3.48B	2.51B	11.81B	11.39B
High Estimate	4.43B	3.92B	13.93B	14.37B
Year Ago Sales	3.76B	2.34B	11.52B	12.37B
Sales Growth (year/est)	5.70%	34.90%	7.40%	3.00%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.17	0.6	0.88	0.97
EPS Actual	1.16	0.88	0.82	0.85
Difference	-0.01	0.28	-0.06	-0.12

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-0.90%	46.70%	-6.80%	-12.40%

EPS Trend

	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.22	0.93	3.89	4.14
7 Days Ago	1.22	0.93	3.89	4.14
30 Days Ago	1.23	0.93	3.9	4.14
60 Days Ago	1.19	0.87	3.89	4.14
90 Days Ago	1.21	0.84	3.89	4.14

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 30 Days	1	1	2	2
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	EIX	Industry	Sector	S&P 500
Current Qtr.	5.20%	3.23		
Next Qtr.	5.70%	-0.00		
Current Year	-5.10%	1.70		
Next Year	6.40%	0.15		
Next 5 Years (per annum)	2.26%	0.07		
Past 5 Years (per annum)	10.42%	N/A		



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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



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NYSE - NYSE Real Time Price. Currency in USD

Quote Lookup **46.58** +0.69 (+1.50%)

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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	1	1	4	4
Avg. Estimate	1.9	N/A	2.4	2.56
Low Estimate	1.9	N/A	2.3	2.4
High Estimate	1.9	N/A	2.48	2.68
Year Ago EPS	1.4	0.02	2.03	2.4

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	1	1	4	4
Avg. Estimate	1.9	N/A	2.4	2.56
Low Estimate	1.9	N/A	2.3	2.4
High Estimate	1.9	N/A	2.48	2.68
Year Ago EPS	1.4	0.02	2.03	2.4

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	N/A	N/A	2	2
Avg. Estimate	N/A	N/A	930.9M	950.75M
Low Estimate	N/A	N/A	921.99M	944.19M
High Estimate	N/A	N/A	939.8M	957.3M
Year Ago Sales	N/A	N/A	607.92M	930.9M
Sales Growth (year/est)	N/A	N/A	53.10%	2.10%

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	N/A	N/A	2	2
Avg. Estimate	N/A	N/A	930.9M	950.75M
Low Estimate	N/A	N/A	921.99M	944.19M
High Estimate	N/A	N/A	939.8M	957.3M
Year Ago Sales	N/A	N/A	607.92M	930.9M
Sales Growth (year/est)	N/A	N/A	53.10%	2.10%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.2	N/A	-0.07	0.44
EPS Actual	1.4	0.02	-0.14	0.55
Difference	0.2	0.02	-0.07	0.11

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.2	N/A	-0.07	0.44
EPS Actual	1.4	0.02	-0.14	0.55
Difference	0.2	0.02	-0.07	0.11

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	16.70%	N/A	-100.00%	25.00%

EPS Trend

	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.9	N/A	2.4	2.56
7 Days Ago	1.9	N/A	2.4	2.56
30 Days Ago	1.9	N/A	2.37	2.56
60 Days Ago	2	0.2	2.52	2.64
90 Days Ago	1.65	0.2	2.52	2.64

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	EE	Industry	Sector	S&P 500
Current Qtr.	35.70%	3.23		
Next Qtr.	-100.00%	-0.00		
Current Year	18.20%	1.70		
Next Year	6.70%	0.15		
Next 5 Years (per annum)	7.00%	0.07		
Past 5 Years (per annum)	-13.63%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



ETR is
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Quote Lookup
79.14 **+0.67 (+0.85 %)** **79.14** 0.00 (0.00 %)

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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	10	9	19	20
Avg. Estimate	1.99	0.51	6.61	5.16
Low Estimate	1.44	0.17	4.91	4.8
High Estimate	2.39	1.1	7.29	5.56
Year Ago EPS	1.9	1.58	6	6.61

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	10	9	19	20
Avg. Estimate	1.99	0.51	6.61	5.16
Low Estimate	1.44	0.17	4.91	4.8
High Estimate	2.39	1.1	7.29	5.56
Year Ago EPS	1.9	1.58	6	6.61

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	6	5	13	14
Avg. Estimate	3.52B	3.02B	11.79B	11.94B
Low Estimate	3.39B	2.62B	11.06B	11.24B
High Estimate	3.88B	3.48B	13.45B	13.58B
Year Ago Sales	3.37B	2.51B	11.51B	11.79B
Sales Growth (year/est)	4.50%	20.30%	2.40%	1.30%

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	6	5	13	14
Avg. Estimate	3.52B	3.02B	11.79B	11.94B
Low Estimate	3.39B	2.62B	11.06B	11.24B
High Estimate	3.88B	3.48B	13.45B	13.58B
Year Ago Sales	3.37B	2.51B	11.51B	11.79B
Sales Growth (year/est)	4.50%	20.30%	2.40%	1.30%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	2	1.45	1.18	1.05
EPS Actual	1.9	1.58	1.35	3.11
Difference	-0.1	0.13	0.17	2.06

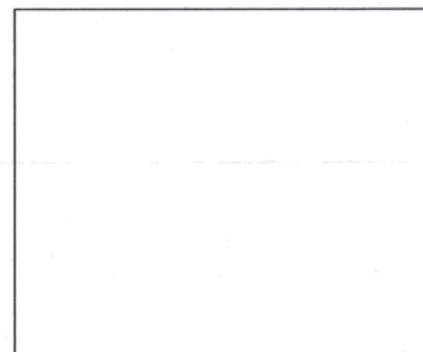
	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	2	1.45	1.18	1.05
EPS Actual	1.9	1.58	1.35	3.11
Difference	-0.1	0.13	0.17	2.06

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-5.00%	9.00%	14.40%	196.20%

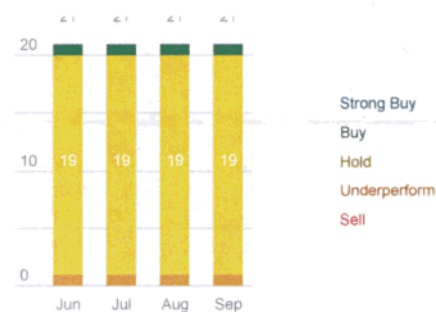
EPS Trend	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.99	0.51	6.61	5.16
7 Days Ago	1.99	0.55	6.7	5.16
30 Days Ago	2.02	0.56	6.51	5.17
60 Days Ago	2.11	0.58	5.1	5.22
90 Days Ago	2.12	0.58	5.11	5.24

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	1	N/A	1	1
Up Last 30 Days	2	1	5	1
Down Last 30 Days	N/A	1	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates	ETR	Industry	Sector	S&P 500
Current Qtr.	4.70%	3.23		
Next Qtr.	-67.70%	-0.00		
Current Year	10.20%	1.70		
Next Year	-21.90%	0.15		
Next 5 Years (per annum)	-2.14%	0.07		
Past 5 Years (per annum)	1.92%	N/A		



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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



GXP is
0.67%
up



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Great Plains Energy Incorporated (GXP) [☆ Add to watchlist](#)

NYSE - NYSE Real Time Price. Currency in USD

Quote Lookup

26.98 +0.18 (+0.67 %) **26.98** 0.00 (0.00 %)

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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	5	4	9	11
Avg. Estimate	0.94	0.12	1.75	1.81
Low Estimate	0.87	0.09	1.72	1.76
High Estimate	1.04	0.16	1.78	1.88
Year Ago EPS	0.82	0.15	1.37	1.75

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	4	3	6	8
Avg. Estimate	808.95M	584.13M	2.6B	2.71B
Low Estimate	776M	573.4M	2.54B	2.59B
High Estimate	832M	599M	2.66B	2.86B
Year Ago Sales	781.4M	562.7M	2.5B	2.6B
Sales Growth (year/est)	3.50%	3.80%	4.10%	3.90%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.88	0.17	0.14	0.42
EPS Actual	0.82	0.15	0.17	0.55
Difference	-0.06	-0.02	0.03	0.13

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-6.80%	-11.80%	21.40%	31.00%

EPS Trend

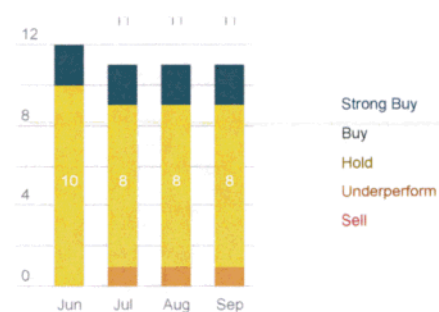
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.94	0.12	1.75	1.81
7 Days Ago	0.94	0.12	1.75	1.81
30 Days Ago	0.94	0.12	1.75	1.81
60 Days Ago	1.02	0.14	1.72	1.81
90 Days Ago	1.02	0.14	1.72	1.82

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	GXP	Industry	Sector	S&P 500
Current Qtr.	14.60%	3.23		
Next Qtr.	-20.00%	-0.00		
Current Year	27.70%	1.70		
Next Year	3.40%	0.15		
Next 5 Years (per annum)	5.00%	0.07		
Past 5 Years (per annum)	9.73%	N/A		

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S&P 500

2,139.12
-0.04 (0.00 %)

Dow 30

18,120.17
-3.63 (-0.02 %)

Nasdaq

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-9.54 (-0.18 %)
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78.39 +0.81 (+1.04 %)

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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	1	1	3	3
Avg. Estimate	1.75	0.47	3.89	4.03
Low Estimate	1.75	0.47	3.85	3.95
High Estimate	1.75	0.47	3.92	4.09
Year Ago EPS	1.46	0.63	3.87	3.89

Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	N/A	N/A	2	2
Avg. Estimate	N/A	N/A	1.27B	1.29B
Low Estimate	N/A	N/A	1.26B	1.28B
High Estimate	N/A	N/A	1.28B	1.3B
Year Ago Sales	N/A	N/A	1.27B	1.27B
Sales Growth (year/est)	N/A	N/A	-0.10%	1.50%

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.54	0.64	0.53	0.99
EPS Actual	1.46	0.63	0.51	1.12
Difference	-0.08	-0.01	-0.02	0.13

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-5.20%	-1.60%	-3.80%	13.10%

EPS Trend

	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.75	0.47	3.89	4.03
7 Days Ago	1.75	0.47	3.89	4.03
30 Days Ago	1.75	0.47	3.89	4.03
60 Days Ago	1.82	0.59	3.89	4.03
90 Days Ago	1.55	0.64	3.89	4.03

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	IDA	Industry	Sector	S&P 500
Current Qtr.	19.90%	3.23		
Next Qtr.	-25.40%	-0.00		
Current Year	0.50%	1.70		
Next Year	3.60%	0.15		
Next 5 Years (per annum)	4.00%	0.07		
Past 5 Years (per annum)	12.59%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

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-9.54 (-0.18 %)



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Quote Lookup
56.78 +0.57 (+1.01 %) **56.78** 0.00 (0.00 %)

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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	N/A	N/A	1	1
Avg. Estimate	N/A	N/A	2.3	2.45
Low Estimate	N/A	N/A	2.3	2.45
High Estimate	N/A	N/A	2.3	2.45
Year Ago EPS	N/A	N/A	2.06	2.3

Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	1	1	1	1
Avg. Estimate	N/A	N/A	598.2M	612.8M
Low Estimate	176M	131.3M	598.2M	612.8M
High Estimate	176M	131.3M	598.2M	612.8M
Year Ago Sales	N/A	N/A	564.03M	598.2M
Sales Growth (year/est)	N/A	N/A	6.10%	2.40%

Earnings History	Invalid Date	Invalid Date	Invalid Date	12/30/2015
EPS Est.	N/A	N/A	N/A	0.47
EPS Actual	N/A	N/A	N/A	0.32
Difference	N/A	N/A	N/A	-0.15

Earnings History

	Invalid Date	Invalid Date	Invalid Date	12/30/2015
Surprise %	N/A	N/A	N/A	-31.90%

EPS Trend

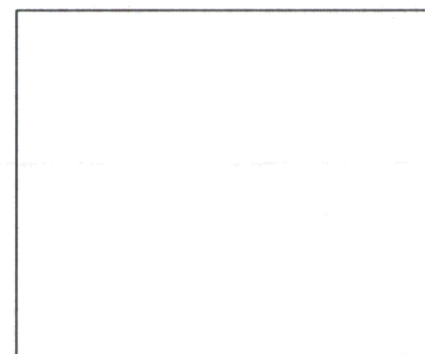
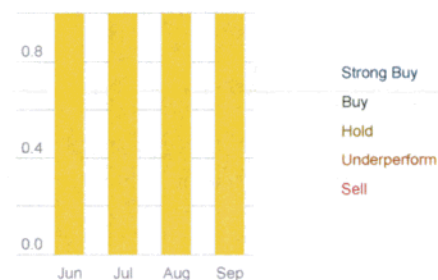
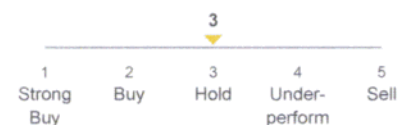
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	N/A	N/A	2.3	2.45
7 Days Ago	0.55	0.41	2.3	2.45
30 Days Ago	0.55	0.41	2.3	2.45
60 Days Ago	0.55	0.41	2.3	2.45
90 Days Ago	0.55	0.41	2.3	2.45

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	MGEE	Industry	Sector	S&P 500
Current Qtr.	N/A	3.23		
Next Qtr.	N/A	-0.00		
Current Year	11.70%	1.70		
Next Year	6.50%	0.15		
Next 5 Years (per annum)	4.00%	0.07		
Past 5 Years (per annum)	5.99%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



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Quote Lookup

124.74 +1.42 (+1.15 %) **124.69** -0.05 (-0.04%)

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Currency in USD

Earnings Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	N/A	N/A	N/A	N/A
Avg. Estimate	N/A	N/A	N/A	N/A
Low Estimate	N/A	N/A	N/A	N/A
High Estimate	N/A	N/A	N/A	N/A
Year Ago EPS	N/A	N/A	N/A	N/A

Revenue Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	N/A	N/A	N/A	N/A
Avg. Estimate	N/A	N/A	N/A	N/A
Low Estimate	N/A	N/A	N/A	N/A
High Estimate	N/A	N/A	N/A	N/A
Year Ago Sales	N/A	N/A	N/A	N/A
Sales Growth (year/est)	N/A	N/A	N/A	N/A

Earnings History

Invalid Date Invalid Date Invalid Date 3/30/2014

EPS Est.	N/A	N/A	N/A	N/A
EPS Actual	N/A	N/A	N/A	-0.02
Difference	N/A	N/A	N/A	-0.02

Earnings History

	Invalid Date	Invalid Date	Invalid Date	3/30/2014
Surprise %	N/A	N/A	N/A	N/A

EPS Trend

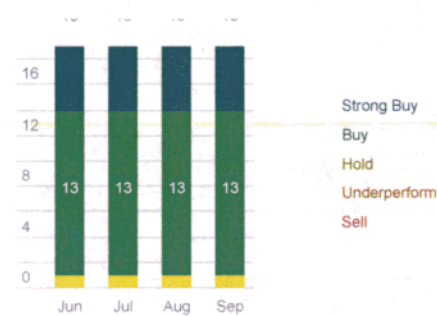
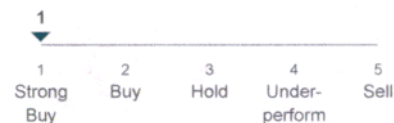
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	N/A	N/A	N/A	N/A
7 Days Ago	N/A	N/A	-0.02	0.06
30 Days Ago	N/A	N/A	-0.02	0.06
60 Days Ago	N/A	N/A	-0.02	0.06
90 Days Ago	N/A	N/A	-0.02	0.06

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	NEE	Industry	Sector	S&P 500
Current Qtr.	N/A	N/A		
Next Qtr.	N/A	N/A		
Current Year	N/A	N/A		
Next Year	N/A	1.42		
Next 5 Years (per annum)	N/A	0.50		
Past 5 Years (per annum)	N/A	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



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OGE Energy Corp. (OGE) [☆ Add to watchlist](#)

NYSE - NYSE Real Time Price. Currency in USD

Quote Lookup
31.85 **+0.41 (+1.30 %)** **31.85** 0.00 (0.00%)

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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	3	3	8	8
Avg. Estimate	0.94	0.29	1.77	1.88
Low Estimate	0.92	0.23	1.75	1.77
High Estimate	0.95	0.34	1.8	1.98
Year Ago EPS	0.55	0.15	1.36	1.77

Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	N/A	N/A	4	4
Avg. Estimate	N/A	N/A	2.39B	2.48B
Low Estimate	N/A	N/A	2.29B	2.32B
High Estimate	N/A	N/A	2.54B	2.65B
Year Ago Sales	N/A	N/A	2.2B	2.39B
Sales Growth (year/est)	N/A	N/A	9.00%	3.40%

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.92	0.23	0.13	0.41
EPS Actual	0.55	0.15	0.13	0.35
Difference	-0.37	-0.08	N/A	-0.06

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-40.20%	-34.80%	N/A	-14.60%

EPS Trend

	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.94	0.29	1.77	1.88
7 Days Ago	0.94	0.29	1.77	1.88
30 Days Ago	0.94	0.28	1.77	1.89
60 Days Ago	0.95	0.25	1.77	1.89
90 Days Ago	0.95	0.25	1.77	1.89

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	1	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	OGE	Industry	Sector	S&P 500
Current Qtr.	70.90%	3.23		
Next Qtr.	93.30%	-0.00		
Current Year	30.10%	1.70		
Next Year	6.20%	0.15		
Next 5 Years (per annum)	4.30%	0.07		
Past 5 Years (per annum)	-7.53%	N/A		

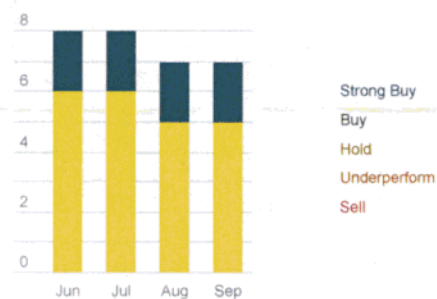
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S&P 500

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-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	1	N/A	1	1
Avg. Estimate	0.42	N/A	1.6	1.6
Low Estimate	0.42	N/A	1.6	1.6
High Estimate	0.42	N/A	1.6	1.6
Year Ago EPS	0.42	0.41	1.56	1.6

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	1	N/A	1	1
Avg. Estimate	0.42	N/A	1.6	1.6
Low Estimate	0.42	N/A	1.6	1.6
High Estimate	0.42	N/A	1.6	1.6
Year Ago EPS	0.42	0.41	1.56	1.6

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	1	1	1	1
Avg. Estimate	204M	193.2M	798.9M	816.5M
Low Estimate	204M	193.2M	798.9M	816.5M
High Estimate	204M	193.2M	798.9M	816.5M
Year Ago Sales	200.02M	188.79M	779.8M	798.9M
Sales Growth (year/est)	2.00%	2.30%	2.40%	2.20%

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	1	1	1	1
Avg. Estimate	204M	193.2M	798.9M	816.5M
Low Estimate	204M	193.2M	798.9M	816.5M
High Estimate	204M	193.2M	798.9M	816.5M
Year Ago Sales	200.02M	188.79M	779.8M	798.9M
Sales Growth (year/est)	2.00%	2.30%	2.40%	2.20%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.44	0.44	0.31	0.38
EPS Actual	0.42	0.41	0.38	0.41
Difference	-0.02	-0.03	0.07	0.03

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.44	0.44	0.31	0.38
EPS Actual	0.42	0.41	0.38	0.41
Difference	-0.02	-0.03	0.07	0.03

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-4.50%	-6.80%	22.60%	7.90%

EPS Trend

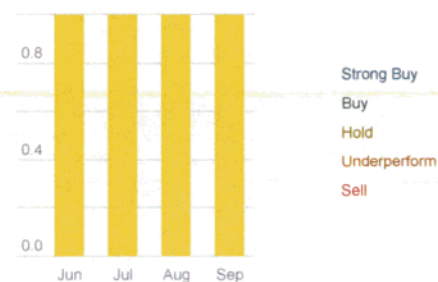
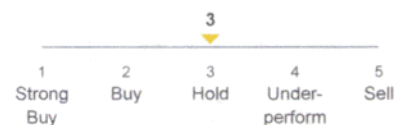
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.42	N/A	1.6	1.6
7 Days Ago	0.42	0.42	1.6	1.6
30 Days Ago	0.42	0.42	1.6	1.6
60 Days Ago	0.4	0.42	1.55	1.6
90 Days Ago	0.4	0.42	1.55	1.6

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	OTTR	Industry	Sector	S&P 500
Current Qtr.	N/A	3.23		
Next Qtr.	N/A	-0.00		
Current Year	2.60%	1.70		
Next Year	N/A	0.15		
Next 5 Years (per annum)	6.00%	0.07		
Past 5 Years (per annum)	13.66%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



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Quote Lookup
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Currency in USD

Earnings Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	10	9	17	19
Avg. Estimate	1.13	1.03	3.72	3.66
Low Estimate	0.86	0.72	3.65	3.56
High Estimate	1.5	1.49	3.76	3.75
Year Ago EPS	0.84	0.5	3.12	3.72

Revenue Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	6	5	13	14
Avg. Estimate	5.05B	4.55B	17.84B	18.41B
Low Estimate	4.71B	3.82B	17.52B	17.95B
High Estimate	5.89B	5.48B	18.55B	19.65B
Year Ago Sales	4.55B	4.17B	16.83B	17.84B
Sales Growth (year/est)	11.00%	9.30%	6.00%	3.20%

Earnings History

9/29/2015 12/30/2015 3/30/2016 6/29/2016

EPS Est.	0.96	0.44	0.73	0.92
EPS Actual	0.84	0.5	0.82	0.66
Difference	-0.12	0.06	0.09	-0.26

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-12.50%	13.60%	12.30%	-28.30%

EPS Trend

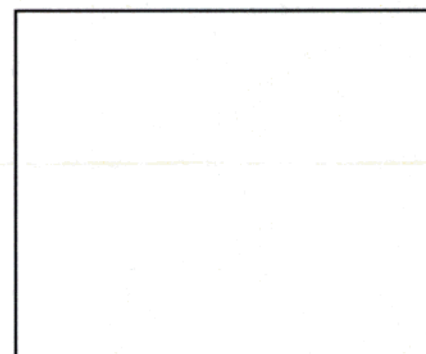
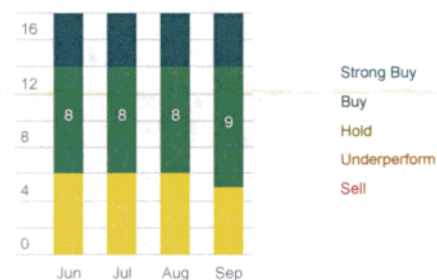
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.13	1.03	3.72	3.66
7 Days Ago	1.13	1.03	3.72	3.65
30 Days Ago	1.12	1.07	3.72	3.66
60 Days Ago	1.1	0.86	3.72	3.68
90 Days Ago	1.11	0.81	3.71	3.68

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	1	1	1
Up Last 30 Days	N/A	1	1	1
Down Last 30 Days	1	N/A	1	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	PCG	Industry	Sector	S&P 500
Current Qtr.	34.50%	3.23		
Next Qtr.	106.00%	-0.00		
Current Year	19.20%	1.70		
Next Year	-1.60%	0.15		
Next 5 Years (per annum)	5.70%	0.07		
Past 5 Years (per annum)	-4.89%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



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Quote Lookup

76.88 **+0.59 (+0.77%)** **76.88** 0.00 (0.00%)

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Currency in USD

Earnings Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	7	7	14	17
Avg. Estimate	2.45	0.37	3.99	4.2
Low Estimate	2.29	0.26	3.92	4.16
High Estimate	2.55	0.52	4.03	4.25
Year Ago EPS	2.3	0.37	3.92	3.99

Revenue Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	5	5	10	13
Avg. Estimate	1.22B	758.33M	3.55B	3.67B
Low Estimate	1.2B	734.09M	3.5B	3.56B
High Estimate	1.24B	794.88M	3.6B	3.88B
Year Ago Sales	1.2B	734.43M	3.5B	3.55B
Sales Growth (year/est)	1.60%	3.30%	1.60%	3.40%

Earnings History

9/29/2015 12/30/2015 3/30/2016 6/29/2016

EPS Est.	2.32	0.26	0.12	1.14
EPS Actual	2.3	0.37	0.04	1.08
Difference	-0.02	0.11	-0.08	-0.06

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-0.90%	42.30%	-66.70%	-5.30%

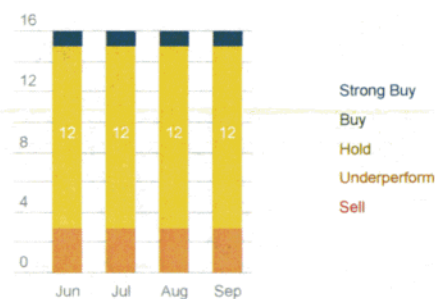
EPS Trend	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	2.45	0.37	3.99	4.2
7 Days Ago	2.45	0.37	3.99	4.2
30 Days Ago	2.45	0.37	3.99	4.2
60 Days Ago	2.38	0.33	3.99	4.2
90 Days Ago	2.38	0.33	3.99	4.2

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

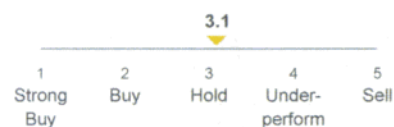
Growth Estimates	PNW	Industry	Sector	S&P 500
Current Qtr.	6.50%	3.23		
Next Qtr.	N/A	-0.00		
Current Year	1.80%	1.70		
Next Year	5.30%	0.15		
Next 5 Years (per annum)	3.80%	0.07		
Past 5 Years (per annum)	-14.74%	N/A		



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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

5,235.03

-9.54 (-0.18 %)



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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	6	6	11	12
Avg. Estimate	0.43	0.57	2.12	2.37
Low Estimate	0.4	0.48	2.1	2.25
High Estimate	0.46	0.63	2.17	2.43
Year Ago EPS	0.4	0.57	2.04	2.12

Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	4	4	9	10
Avg. Estimate	471.44M	536.47M	1.97B	2.05B
Low Estimate	413.7M	479.64M	1.9B	1.97B
High Estimate	501.33M	637.91M	2.15B	2.22B
Year Ago Sales	476M	499M	1.9B	1.97B
Sales Growth (year/est)	-1.00%	7.50%	3.60%	4.10%

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.48	0.62	0.61	0.43
EPS Actual	0.4	0.57	0.68	0.42
Difference	-0.08	-0.05	0.07	-0.01

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-16.70%	-8.10%	11.50%	-2.30%

EPS Trend	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.43	0.57	2.12	2.37
7 Days Ago	0.43	0.57	2.12	2.37
30 Days Ago	0.43	0.57	2.12	2.37
60 Days Ago	0.41	0.56	2.11	2.35
90 Days Ago	0.41	0.56	2.11	2.35

EPS Revisions	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

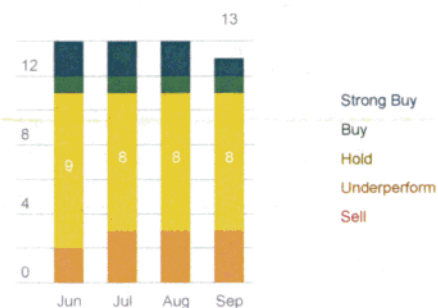
Growth Estimates	POR	Industry	Sector	S&P 500
Current Qtr.	7.50%	3.23		
Next Qtr.	N/A	-0.00		
Current Year	3.90%	1.70		
Next Year	11.80%	0.15		
Next 5 Years (per annum)	6.30%	0.07		
Past 5 Years (per annum)	7.84%	N/A		

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2,139.12

-0.04 (0.00 %)



Dow 30

18,120.17

-3.63 (-0.02 %)



Nasdaq

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42.66 +0.36 (+0.85 %) **42.66** 0.00 (0.00%)

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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	8	8	15	18
Avg. Estimate	0.88	0.5	2.87	2.88
Low Estimate	0.77	0.4	2.82	2.73
High Estimate	1	0.58	2.9	3
Year Ago EPS	0.8	0.5	2.91	2.87

Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	5	5	11	13
Avg. Estimate	2.82B	2.59B	10.2B	10.46B
Low Estimate	2.65B	2.33B	9.47B	9.27B
High Estimate	3B	3.11B	11.49B	11.99B
Year Ago Sales	2.69B	2.28B	10.41B	10.2B
Sales Growth (year/est)	4.90%	13.90%	-2.00%	2.50%

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.81	0.5	0.88	0.58
EPS Actual	0.8	0.5	0.93	0.57
Difference	-0.01	N/A	0.05	-0.01

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-1.20%	N/A	5.70%	-1.70%

EPS Trend

	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.88	0.5	2.87	2.88
7 Days Ago	0.9	0.49	2.88	2.88
30 Days Ago	0.9	0.49	2.88	2.88
60 Days Ago	0.88	0.52	2.88	2.88
90 Days Ago	0.87	0.51	2.87	2.89

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	1	2	1	N/A
Up Last 30 Days	1	2	1	N/A
Down Last 30 Days	N/A	N/A	1	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	PEG	Industry	Sector	S&P 500
Current Qtr.	10.00%	3.23		
Next Qtr.	N/A	-0.00		
Current Year	-1.40%	1.70		
Next Year	0.30%	0.15		
Next 5 Years (per annum)	1.42%	0.07		
Past 5 Years (per annum)	2.53%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



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-3.63 (-0.02 %)



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-9.54 (-0.18 %)



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72.85 +0.93 (+1.29 %) **72.85** 0.00 (0.00%)

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Currency in USD

Earnings Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	7	7	10	10
Avg. Estimate	1.07	0.91	3.97	4.18
Low Estimate	0.94	0.85	3.84	4.03
High Estimate	1.18	0.97	4.06	4.32
Year Ago EPS	1.04	0.69	3.81	3.97

Revenue Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	3	3	9	9
Avg. Estimate	1.14B	1.35B	4.54B	4.7B
Low Estimate	959.33M	1.01B	4.05B	4.17B
High Estimate	1.23B	1.82B	5.12B	5.29B
Year Ago Sales	1.07B	956M	4.38B	4.54B
Sales Growth (year/est)	6.60%	40.90%	3.70%	3.50%

Earnings History

9/29/2015 12/30/2015 3/30/2016 6/29/2016

EPS Est.	0.96	0.75	1.34	0.74
EPS Actual	1.04	0.69	1.23	0.74
Difference	0.08	-0.06	-0.11	N/A

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	8.30%	-8.00%	-8.20%	N/A

EPS Trend

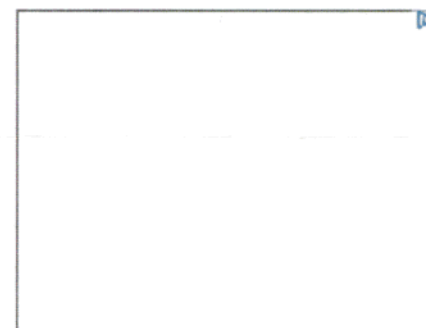
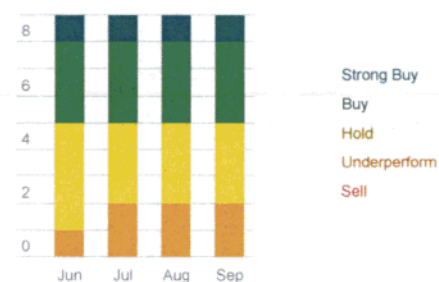
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.07	0.91	3.97	4.18
7 Days Ago	1.05	0.91	3.97	4.18
30 Days Ago	1.05	0.91	3.96	4.16
60 Days Ago	1.05	0.94	3.95	4.15
90 Days Ago	1.05	0.94	3.94	4.16

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	1
Up Last 30 Days	N/A	N/A	N/A	1
Down Last 30 Days	N/A	N/A	1	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	SCG	Industry	Sector	S&P 500
Current Qtr.	2.90%	3.23		
Next Qtr.	31.90%	-0.00		
Current Year	4.20%	1.70		
Next Year	5.30%	0.15		
Next 5 Years (per annum)	5.40%	0.07		
Past 5 Years (per annum)	6.93%	N/A		

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S&P 500

2,139.12

-0.04 (0.00 %)



Dow 30

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-3.63 (-0.02 %)



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5,235.03

-9.54 (-0.18 %)



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Sempra Energy (SRE) ☆ [Add to watchlist](#)

NYSE - NYSE Real Time Price. Currency in USD

Quote Lookup
107.94 +1.32 (+1.24%) **107.94** 0.00 (0.00%)

At close: 4:03 PM EDT

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Currency in USD

Earnings Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	7	7	15	16
Avg. Estimate	0.92	1.57	4.79	5.13
Low Estimate	0.82	1.43	4.6	4.92
High Estimate	1.01	1.88	4.92	5.38
Year Ago EPS	1	1.47	5.21	4.79

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	7	7	15	16
Avg. Estimate	0.92	1.57	4.79	5.13
Low Estimate	0.82	1.43	4.6	4.92
High Estimate	1.01	1.88	4.92	5.38
Year Ago EPS	1	1.47	5.21	4.79

Revenue Estimate

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	3	3	9	9
Avg. Estimate	2.73B	3.09B	10.49B	11B
Low Estimate	2.58B	2.9B	10.22B	10.37B
High Estimate	2.93B	3.45B	10.9B	11.53B
Year Ago Sales	2.48B	2.7B	10.23B	10.49B
Sales Growth (year/est)	10.10%	14.40%	2.50%	4.90%

	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	3	3	9	9
Avg. Estimate	2.73B	3.09B	10.49B	11B
Low Estimate	2.58B	2.9B	10.22B	10.37B
High Estimate	2.93B	3.45B	10.9B	11.53B
Year Ago Sales	2.48B	2.7B	10.23B	10.49B
Sales Growth (year/est)	10.10%	14.40%	2.50%	4.90%

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.88	1.32	1.66	0.97
EPS Actual	1	1.47	1.47	0.79
Difference	0.12	0.15	-0.19	-0.18

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.88	1.32	1.66	0.97
EPS Actual	1	1.47	1.47	0.79
Difference	0.12	0.15	-0.19	-0.18

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	13.60%	11.40%	-11.40%	-18.60%

EPS Trend

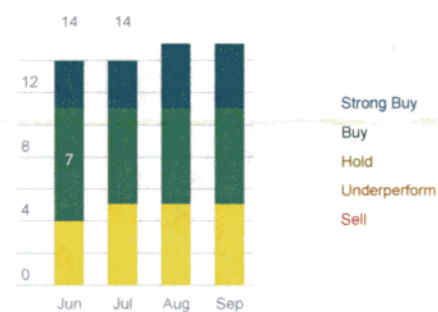
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.92	1.57	4.79	5.13
7 Days Ago	0.92	1.57	4.79	5.13
30 Days Ago	0.92	1.55	4.79	5.17
60 Days Ago	0.97	1.43	4.82	5.25
90 Days Ago	0.97	1.42	4.86	5.34

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	1	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	SRE	Industry	Sector	S&P 500
Current Qtr.	-8.00%	3.23		
Next Qtr.	6.80%	-0.00		
Current Year	-8.10%	1.70		
Next Year	7.10%	0.15		
Next 5 Years (per annum)	6.78%	0.07		
Past 5 Years (per annum)	3.30%	N/A		

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S&P 500

2,144.06
4.94 (0.23 %)



Dow 30

18,164.58
44.41 (0.25 %)



Nasdaq

5,248.25
13.22 (0.25%)



VVC is
0.80%
up

VVC



Watch Live: How to respond to growing security threats around the globe

Vectren Corporation (VVC) [★ Add to watchlist](#)

NYSE - NYSE Real Time Price. Currency in USD

50.36 +0.30 (+0.60%)

As of 2:18 PM EDT. Market open.

Quote Lookup

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Currency in USD

Earnings Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	5	5	6	6
Avg. Estimate	0.64	0.84	2.47	2.66
Low Estimate	0.62	0.81	2.41	2.6
High Estimate	0.67	0.86	2.5	2.7
Year Ago EPS	0.48	0.79	2.39	2.47

Revenue Estimate

Current Qtr. Next Qtr. Current Year Next Year

No. of Analysts	2	2	4	4
Avg. Estimate	611.78M	647.96M	2.48B	2.62B
Low Estimate	587.66M	619.01M	2.33B	2.35B
High Estimate	635.9M	676.9M	2.6B	2.8B
Year Ago Sales	573.5M	604M	2.43B	2.48B
Sales Growth (year/est)	6.70%	7.30%	2.00%	5.40%

Earnings History

9/29/2015 12/30/2015 3/30/2016 6/29/2016

EPS Est.	0.62	0.7	0.69	0.43
EPS Actual	0.48	0.79	0.58	0.39
Difference	-0.14	0.09	-0.11	-0.04

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-22.60%	12.90%	-15.90%	-9.30%

EPS Trend

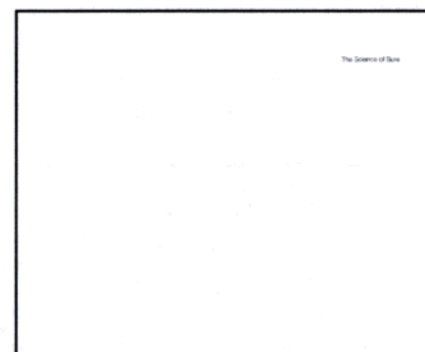
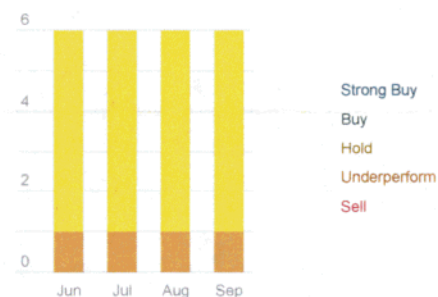
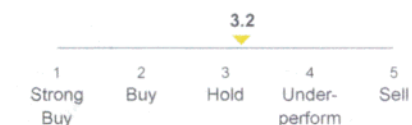
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.64	0.84	2.47	2.66
7 Days Ago	0.64	0.84	2.47	2.66
30 Days Ago	0.63	0.85	2.47	2.67
60 Days Ago	0.61	0.82	2.47	2.67
90 Days Ago	0.61	0.82	2.47	2.67

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	1	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	VVC	Industry	Sector	S&P 500
Current Qtr.	33.30%	0.46		
Next Qtr.	6.30%	0.00		
Current Year	3.30%	-0.03		
Next Year	7.70%	0.07		
Next 5 Years (per annum)	5.00%	0.04		
Past 5 Years (per annum)	8.87%	N/A		

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S&P 500

2,143.89
4.77 (0.22 %)



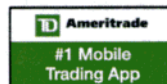
Dow 30

18,163.55
43.38 (0.24 %)



Nasdaq

5,247.87
12.84 (0.25 %)



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Westar Energy, Inc. (WR) [☆ Add to watchlist](#)

NYSE - NYSE Real Time Price. Currency in USD

Quote Lookup

56.08 -0.01 (-0.02 %)

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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	3	2	8	9
Avg. Estimate	1.04	0.48	2.45	2.52
Low Estimate	0.91	0.39	2.43	2.44
High Estimate	1.11	0.57	2.48	2.6
Year Ago EPS	0.97	0.28	2.09	2.45

Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	2	1	7	7
Avg. Estimate	768.71M	637.33M	2.57B	2.65B
Low Estimate	762.42M	637.33M	2.53B	2.59B
High Estimate	775M	637.33M	2.61B	2.74B
Year Ago Sales	732.83M	545.97M	2.46B	2.57B
Sales Growth (year/est)	4.90%	16.70%	4.40%	3.30%

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	1.03	0.36	0.46	0.53
EPS Actual	0.97	0.28	0.46	0.51
Difference	-0.06	-0.08	N/A	-0.02

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	-5.80%	-22.20%	N/A	-3.80%

EPS Trend

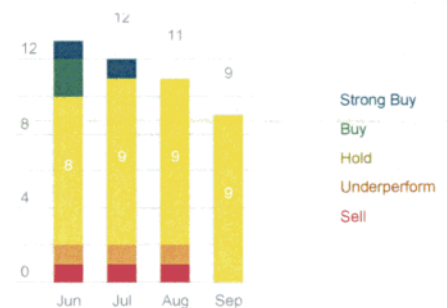
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	1.04	0.48	2.45	2.52
7 Days Ago	1.04	0.48	2.45	2.52
30 Days Ago	1.04	0.43	2.45	2.52
60 Days Ago	1.02	0.43	2.45	2.53
90 Days Ago	1.02	0.43	2.44	2.53

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	WR	Industry	Sector	S&P 500
Current Qtr.	7.20%	3.23		
Next Qtr.	71.40%	-0.00		
Current Year	17.20%	1.70		
Next Year	2.90%	0.15		
Next 5 Years (per annum)	4.45%	0.07		
Past 5 Years (per annum)	3.76%	N/A		

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S&P 500

2,144.22
5.10 (0.24 %)



Dow 30

18,164.70
44.53 (0.25 %)



Nasdaq

5,248.59
13.56 (0.26 %)



Watch Live: How to respond to growing security threats around the globe

Xcel Energy Inc. (XEL) [★ Add to watchlist](#)

NYSE - NYSE Real Time Price. Currency in USD

Quote Lookup

41.56 -0.12 (-0.29 %)

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Currency in USD

Earnings Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	5	5	15	16
Avg. Estimate	0.88	0.47	2.2	2.32
Low Estimate	0.83	0.43	2.17	2.27
High Estimate	0.9	0.52	2.22	2.35
Year Ago EPS	0.84	0.41	2.09	2.2

Revenue Estimate	Current Qtr.	Next Qtr.	Current Year	Next Year
No. of Analysts	3	3	10	11
Avg. Estimate	3.44B	2.95B	11.66B	11.94B
Low Estimate	2.95B	2.83B	11.22B	11.38B
High Estimate	4.28B	3.03B	12.57B	12.99B
Year Ago Sales	2.9B	2.65B	11.02B	11.66B
Sales Growth (year/est)	18.60%	11.50%	5.80%	2.40%

Earnings History	9/29/2015	12/30/2015	3/30/2016	6/29/2016
EPS Est.	0.8	0.4	0.47	0.4
EPS Actual	0.84	0.41	0.47	0.39
Difference	0.04	0.01	N/A	-0.01

Earnings History

	9/29/2015	12/30/2015	3/30/2016	6/29/2016
Surprise %	5.00%	2.50%	N/A	-2.50%

EPS Trend

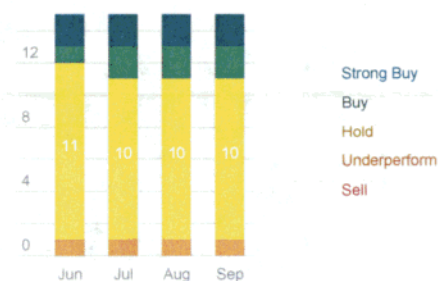
	Current Qtr.	Next Qtr.	Current Year	Next Year
Current Estimate	0.88	0.47	2.2	2.32
7 Days Ago	0.88	0.47	2.2	2.32
30 Days Ago	0.89	0.46	2.2	2.31
60 Days Ago	0.86	0.46	2.2	2.32
90 Days Ago	0.86	0.46	2.2	2.32

EPS Revisions

	Current Qtr.	Next Qtr.	Current Year	Next Year
Up Last 7 Days	N/A	N/A	N/A	1
Up Last 30 Days	1	1	1	2
Down Last 30 Days	N/A	N/A	N/A	N/A
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Estimates

	XEL	Industry	Sector	S&P 500
Current Qtr.	4.80%	3.23		
Next Qtr.	14.60%	-0.00		
Current Year	5.30%	1.70		
Next Year	5.50%	0.15		
Next 5 Years (per annum)	5.42%	0.07		
Past 5 Years (per annum)	3.19%	N/A		

**Recommendation Trends >****Recommendation Rating >**

SCHEDULES

WEIGHTED AVERAGE COST OF CAPITAL

(Dollars in Thousands)

<u>Line No</u>	<u>Description</u>	<u>Capitalization Per Company</u>	<u>RUCO Adjustments</u>	<u>RUCO Adjusted Capitalization</u>	<u>Capital Ratio</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
1	Long Term Debt	\$ 3,728,555	\$ -	\$ 3,728,555	44.20%	5.13%	2.27%
2	Preferred Stock	\$ -	\$ -	\$ -	0.00%	0.00%	0.00%
3	Common Equity	\$ 4,706,351	\$ -	\$ 4,706,351	55.80%	9.42%	5.26%
4	TOTAL CAPITALIZATION	\$8,434,906	\$ -	\$8,434,906	100.00%		7.53%

Cost of Capital Calculation
Fair Value Rate Base (FVRB) and
Fair Value Rate of Return (FVROR)

RUCO Recommended
(Dollars in Thousands)

Calculation of RUCO Fair Value Rate Base (FVRB)

Line No.	Rate Base Estimate	Amount	Weighting	Weighted Amount
1	¹ Original Cost Rate Base (OCRB) - RUCO Recommended	\$ 6,451,009	50%	\$ 3,225,505
2	² Reconstruction Cost New (RCND) Rate Base - RUCO Recommended	\$ 12,859,542	50%	6,429,771
3	Fair Value Rate Base (FVRB)			\$ 9,655,276
4				
5	Appreciation above OCRB			\$ 3,204,267
6	FV/OCRB Multiple	1.50		

Calculation of RUCO Fair Value Rate of Return (FVROR)

	Capital	Amount	Percent	Cost Rate	Weighted Cost
7	Long-Term Debt	\$ 2,851,596	29.53%	5.13%	1.52%
8	Common Equity	3,599,413	37.28%	9.42%	3.51%
9	Capital Financing OCRB	\$ 6,451,009			
10					
11	³ Fair Value Increment	\$ 3,204,267	33.19%	1.00%	0.33%
12					
13	Fair Value Rate of Return	\$ 9,655,276	100.00%		5.36%

Sources:

¹ Radigan Direct, Schedule FWR-1

² Radigan Direct, Schedule FWR-1

³ RUCO adopts the Company proposed 1.0 % cost rate to be assigned to the fair value increment.

Cost of Common Equity
As Obtained from RUCO's Proxy Group of Companies

Line No			Estimated Cost	Weight Factor	Weighted Cost
1	Discounted Cash Flow Model ("DCF")	Schedule JAC - 3	8.45%	40%	3.40%
2	Capital Asset Pricing Model ("CAPM")	Schedule JAC - 4	7.40%	20%	1.50%
3	Comparable Earnings Model ("CE")	Schedule JAC - 5	10.31%	40%	4.10%
4	Indicated Cost of Common Equity		8.72%		
5	Indicated Cost of Equity after Weighting Adjustment				9.00%

Cost of Common Equity
As Obtained from Dr. Villadsen's Nuclear Subsample

Line No			Estimated Cost	Weight Factor	Weighted Cost
1	Discounted Cash Flow Model ("DCF")	Schedule JAC - 3	8.85%	40%	3.54%
2	Capital Asset Pricing Model ("CAPM")	Schedule JAC - 4	7.28%	20%	1.46%
3	Comparable Earnings Model ("CE")	Schedule JAC - 5	11.06%	40%	4.42%
4	Indicated Cost of Common Equity		9.06%		
5	Indicated Cost of Equity after Weighting Adjustment				9.42%

RUCO Recommended Cost of Equity	9.42%
--	--------------

CONSTANT GROWTH DCF ANALYSIS

Based on

RUCO's Electric Sample Companies

Line No		(A) Current Dividend Yield (D ₀ /P ₀)	(B) Historic Retention Growth	(C) Projected Retention Growth	(D) Five Year Historic Growth Rate	(E) Projected Per Share Growth Rates	(F) Projected EPS Growth	(G) Average Growth	(H) Expected Dividend Yield (D ₁ /P ₀)	(I) DCF Rates
	<u>Proxy Group Companies</u>									
1	ALLETE	3.5%	2.7%	3.0%	4.5%	3.8%	5.00%	3.8%	3.5%	7.3%
2	Alliant Energy	3.2%	4.0%	4.7%	5.8%	4.8%	6.60%	5.2%	3.2%	8.4%
3	American Electric Power	3.8%	3.8%	3.8%	4.2%	4.3%	2.31%	3.7%	3.6%	7.3%
4	Ameren Corp.	3.5%	2.6%	3.2%	NMF	4.5%	5.20%	3.9%	3.5%	7.4%
5	CMS Energy Corp.	3.0%	5.2%	5.0%	9.7%	6.2%	7.27%	6.7%	3.1%	9.8%
6	Consolidated Edison	3.6%	3.3%	2.8%	2.7%	3.0%	1.98%	2.8%	3.7%	6.4%
7	Dominion Resources	3.8%	3.6%	4.3%	3.3%	8.0%	5.98%	5.0%	3.9%	8.9%
8	DTE Energy	3.3%	3.6%	3.8%	5.2%	5.3%	5.35%	4.7%	3.4%	8.0%
9	Edison International	2.7%	8.4%	5.5%	3.0%	6.2%	2.26%	5.1%	2.8%	7.8%
10	El Paso Electric	2.7%	5.9%	4.0%	5.8%	5.0%	7.00%	5.5%	2.8%	8.3%
11	Entergy Corp.	4.6%	5.2%	4.5%	2.5%	2.7%	NMF	3.7%	4.7%	8.4%
12	Great Plains Energy	3.8%	2.3%	2.3%	3.0%	4.2%	5.00%	3.4%	3.9%	7.3%
13	IDACORP Inc.	2.9%	5.6%	4.0%	7.3%	4.8%	4.00%	5.2%	2.9%	8.1%
14	MGE Energy	2.1%	5.3%	5.8%	5.0%	5.3%	4.00%	5.1%	2.2%	7.3%
15	NextEra Energy	2.9%	6.1%	3.0%	7.0%	7.2%	NMF	5.8%	2.9%	8.7%
16	OGE Energy	3.5%	6.5%	3.3%	7.0%	5.3%	4.30%	5.3%	3.6%	8.9%
17	Otter Tail Corp.	3.5%	1.8%	2.3%	8.0%	4.3%	6.00%	4.5%	3.6%	8.1%
18	PG&E Corp.	3.2%	1.8%	4.2%	2.5%	7.8%	5.70%	4.4%	3.3%	7.7%
19	Pinnacle West Capital	3.3%	3.7%	3.5%	4.7%	4.2%	3.80%	4.0%	3.4%	7.4%
20	Portland General	3.0%	3.7%	3.5%	4.0%	5.0%	6.30%	4.5%	3.1%	7.6%
21	Public Service Enterprise	3.9%	6.2%	4.5%	4.8%	3.5%	1.42%	4.1%	4.0%	8.1%
22	SCANA Corp.	3.2%	4.2%	4.5%	4.0%	4.8%	5.40%	4.6%	3.3%	7.9%
23	Sempra Energy	2.9%	5.3%	4.0%	6.3%	6.0%	6.78%	5.7%	3.0%	8.7%
24	Vectren Corp.	3.3%	2.6%	4.7%	2.7%	6.3%	5.00%	4.3%	3.3%	7.6%
25	Westar Energy	2.7%	3.6%	4.7%	5.3%	4.7%	4.45%	4.5%	2.7%	7.3%
26	Xcel Energy, Inc.	3.4%	4.5%	4.0%	5.0%	5.2%	5.42%	4.8%	3.4%	8.2%
27										
28										
29	Mean	3.28%	4.28%	3.96%	4.93%	5.10%	4.86%	4.62%	3.35%	7.96%
30										
31										
32	Median	3.28%	3.89%	4.00%	4.75%	4.92%	5.10%	4.56%	3.35%	7.97%
33										
34										
35	Composite-Mean		7.63%	7.31%	8.28%	8.45%	8.20%	7.96%		
36										
37										
38	Composite-Median		7.24%	7.35%	8.10%	8.27%	8.45%	7.92%		

CONSTANT GROWTH DCF ANALYSIS

Based on

RUCO's Nuclear Subsample Companies

Line No		(A) Current Dividend Yield (D ₀ /P ₀)	(B) Historic Retention Growth	(C) Projected Retention Growth	(D) Five Year Historic Growth Rate	(E) Projected Per Share Growth Rates	(F) Projected EPS Growth	(G) Average Growth	(H) Expected Dividend Yield (D ₁ /P ₀)	(I) DCF Rates
	<u>Proxy Group Companies</u>									
1	Alliant Energy	3.2%	4.0%	4.7%	5.8%	4.8%	6.6%	5.2%	3.2%	8.4%
2	Ameren Corp.	3.5%	2.6%	3.2%	NMF	4.5%	5.2%	3.9%	3.5%	7.4%
3	Dominion Resources	3.8%	3.6%	4.3%	3.3%	8.0%	6.0%	5.0%	3.9%	8.9%
4	DTE Energy	3.3%	3.6%	3.8%	5.2%	5.3%	5.4%	4.7%	3.4%	8.0%
5	Entergy Corp.	4.6%	5.2%	4.5%	2.5%	2.7%	NMF	3.7%	4.7%	8.4%
6	NextEra Energy	2.9%	6.1%	3.0%	7.0%	7.2%	NMF	5.8%	2.9%	8.7%
7	PG&E Corp.	3.2%	1.8%	4.2%	2.5%	7.8%	5.7%	4.4%	3.3%	7.7%
8	Pinnacle West Capital	3.3%	3.7%	3.5%	4.7%	4.2%	3.8%	4.0%	3.4%	7.4%
9	Public Service Enterprise	3.9%	6.2%	4.5%	4.8%	3.5%	1.4%	4.1%	4.0%	8.1%
10	SCANA Corp.	3.2%	4.2%	4.5%	4.0%	4.8%	5.4%	4.6%	3.3%	7.9%
11										
12										
13	Mean	3.49%	4.09%	4.02%	4.42%	5.28%	4.93%	4.53%	3.57%	8.10%
14										
15										
16	Median	3.31%	3.82%	4.25%	4.67%	4.83%	5.38%	4.49%	3.39%	8.07%
17										
18										
19	Composite-Mean		7.66%	7.58%	7.98%	8.85%	8.50%	8.10%		
20										
21										
22	Composite-Median		7.21%	7.64%	8.05%	8.22%	8.76%	7.88%		

Note: Negative values not used in calculations.

Sources:

Column (A) - Schedule JAC - 3, page 3 of 4
Column (B) - Schedule JAC - 3, page 4 of 4
Column (C) - Schedule JAC - 3, page 4 of 4
Column (D) and Column (E) - Schedule JAC - 3, page 2 of 4
Column (F) See Yahoo Finance, Analyst EPS Growth Estimates - Next 5 Years - Attachment 7
Column (G) - Average Columns (B) through (F)
Column (H) - Column (A) * [1 + Column (G)]
Column (I) - Column (G) + Column (H)

PROXY GROUP -- DIVIDEND YIELD

Line No	Proxy Group Companies	(A) DPS	(B) High	(C) Low	(D) Average	(E) Yield
		September-November, 2016				
1	ALLETE	\$2.08	\$64.57	\$56.48	\$60.02	3.47%
2	Alliant Energy	\$1.18	\$40.60	\$34.88	\$37.43	3.15%
3	American Electric Power	\$2.24	\$66.96	\$58.16	\$62.84	3.56%
4	Ameren Corp.	\$1.70	\$51.91	\$46.84	\$49.12	3.46%
5	CMS Energy Corp.	\$1.24	\$44.44	\$38.78	\$41.38	3.00%
6	Consolidated Edison	\$2.68	\$79.54	\$68.76	\$73.60	3.64%
7	Dominion Resources	\$2.80	\$77.32	\$69.51	\$73.68	3.80%
8	DTE Energy	\$3.08	\$97.60	\$89.66	\$93.30	3.30%
9	Edison International	\$1.92	\$76.30	\$67.44	\$71.47	2.69%
10	El Paso Electric	\$1.24	\$48.75	\$42.49	\$45.35	2.73%
11	Entergy Corp.	\$3.40	\$81.83	\$66.71	\$74.10	4.59%
12	Great Plains Energy	\$1.05	\$28.70	\$26.33	\$27.34	3.84%
13	IDACORP Inc.	\$2.20	\$81.55	\$72.93	\$76.62	2.87%
14	MGE Energy	\$1.23	\$63.55	\$53.48	\$57.36	2.14%
15	NextEra Energy	\$3.48	\$128.87	\$110.49	\$121.77	2.86%
16	OGE Energy	\$1.10	\$33.10	\$29.57	\$31.12	3.53%
17	Otter Tail Corp.	\$1.25	\$39.75	\$33.08	\$35.41	3.54%
18	PG&E Corp.	\$1.96	\$64.40	\$57.63	\$60.71	3.23%
19	Pinnacle West Capital	\$2.50	\$80.19	\$70.86	\$75.10	3.33%
20	Portland General	\$1.28	\$44.32	\$40.28	\$42.29	3.03%
21	Public Service Enterprise	\$1.64	\$44.01	\$39.28	\$41.57	3.94%
22	SCANA Corp.	\$2.30	\$75.92	\$67.31	\$71.11	3.23%
23	Sempra Energy	\$3.02	\$111.40	\$92.95	\$103.71	2.91%
24	Vectren Corp.	\$1.60	\$52.04	\$46.52	\$49.05	3.26%
25	Westar Energy	\$1.52	\$57.49	\$54.57	\$56.54	2.69%
26	Xcel Energy, Inc.	\$1.36	\$43.49	\$38.00	\$40.56	3.35%
27						
28	Average					3.28%

Sources:

Column (A) - Value Line Investment Survey - Current Quarterly Dividend, Annualized
Columns (B), (C), and (D) - Yahoo Finance

PROXY GROUP -- PER SHARE GROWTH RATES

Line No	Proxy Group Companies	5-Year Historic Growth Rates				Est'd '12-'14 to '18-'20 Growth Rates			
		EPS	DPS	BVPS	Average	EPS	DPS	BVPS	Average
1	ALLETE	5.0%	2.5%	6.0%	4.5%	4.0%	3.5%	4.0%	3.8%
2	Alliant Energy	7.0%	6.5%	4.0%	5.8%	6.0%	4.5%	4.0%	4.8%
3	American Electric Power	3.5%	4.0%	5.0%	4.2%	4.0%	5.0%	4.0%	4.3%
4	Ameren Corp.	NMF	NMF	NMF	NMF	6.0%	4.0%	3.5%	4.5%
5	CMS Energy Corp.	8.5%	16.5%	4.0%	9.7%	6.0%	6.5%	6.0%	6.2%
6	Consolidated Edison	3.0%	1.5%	3.5%	2.7%	2.5%	3.0%	3.5%	3.0%
7	Dominion Resources	1.5%	7.0%	1.5%	3.3%	10.0%	8.0%	6.0%	8.0%
8	DTE Energy	6.5%	5.0%	4.0%	5.2%	6.0%	5.5%	4.5%	5.3%
9	Edison International	3.5%	4.0%	1.5%	3.0%	3.5%	9.5%	5.5%	6.2%
10	El Paso Electric	4.0%	NMF	7.5%	5.8%	4.0%	7.0%	4.0%	5.0%
11	Entergy Corp.	NMF	1.5%	3.5%	2.5%	2.0%	3.0%	3.0%	2.7%
12	Great Plains Energy	4.0%	NMF	2.0%	3.0%	4.5%	5.5%	2.5%	4.2%
13	IDACORP Inc.	8.0%	8.0%	6.0%	7.3%	3.0%	7.5%	4.0%	4.8%
14	MGE Energy	7.0%	2.5%	5.5%	5.0%	7.0%	4.0%	5.0%	5.3%
15	NextEra Energy	5.0%	8.5%	7.5%	7.0%	4.5%	11.0%	6.0%	7.2%
16	OGE Energy	6.5%	6.0%	8.5%	7.0%	3.0%	9.5%	3.5%	5.3%
17	Otter Tail Corp.	15.5%	0.5%	NMF	8.0%	6.0%	1.5%	5.5%	4.3%
18	PG&E Corp.	NMF	1.5%	3.5%	2.5%	12.0%	7.0%	4.5%	7.8%
19	Pinnacle West Capital	8.5%	2.0%	3.5%	4.7%	4.0%	5.0%	3.5%	4.2%
20	Portland General	6.5%	2.5%	3.0%	4.0%	5.5%	6.0%	3.5%	5.0%
21	Public Service Enterprise	NMF	2.5%	7.0%	4.8%	2.0%	5.0%	3.5%	3.5%
22	SCANA Corp.	4.5%	2.5%	5.0%	4.0%	4.5%	5.0%	5.0%	4.8%
23	Sempra Energy	1.5%	12.0%	5.5%	6.3%	8.0%	7.0%	3.0%	6.0%
24	Vectren Corp.	3.5%	2.0%	2.5%	2.7%	9.0%	5.0%	5.0%	6.3%
25	Westar Energy	9.0%	3.0%	4.0%	5.3%	6.0%	3.0%	5.0%	4.7%
26	Xcel Energy, Inc.	6.0%	4.5%	4.5%	5.0%	5.5%	6.0%	4.0%	5.2%
27									
28	Average				4.9%				5.1%

Sources:

Value Line Investment Survey - September 16, 2016 (See Attachment 1)
Value Line Investment Survey - October 28, 2016 (See Attachment 1)
Value Line Investment Survey - November 18, 2016 (See Attachment 1)

PROXY GROUP -- GROWTH RATES - RETAINED TO COMMON EQUITY

Line No	Proxy Group Companies	(A) 2011	(B) 2012	(C) 2013	(D) 2014	(E) 2015	Average	2016	2017	2019-'21	Average
1	ALLETE	2.9%	2.3%	2.2%	2.5%	3.6%	2.7%	3.0%	3.0%	3.0%	3.0%
2	Alliant Energy	3.3%	3.9%	4.9%	4.3%	3.4%	4.0%	4.0%	4.5%	5.5%	4.7%
3	American Electric Power	4.2%	3.5%	3.7%	3.8%	3.9%	3.8%	4.0%	4.0%	3.5%	3.8%
4	Ameren Corp.	2.8%	3.0%	1.9%	2.9%	2.5%	2.6%	3.0%	3.0%	3.5%	3.2%
5	CMS Energy Corp.	5.6%	5.0%	5.2%	5.0%	5.2%	5.2%	4.5%	5.5%	5.0%	5.0%
6	Consolidated Edison	3.1%	3.6%	3.6%	2.6%	3.5%	3.3%	2.5%	3.0%	3.0%	2.8%
7	Dominion Resources	4.0%	3.5%	4.2%	3.3%	2.9%	3.6%	3.5%	3.5%	6.0%	4.3%
8	DTE Energy	3.4%	3.5%	2.7%	5.2%	3.4%	3.6%	3.5%	4.0%	4.0%	3.8%
9	Edison International	6.3%	11.4%	8.1%	8.8%	7.2%	8.4%	5.5%	5.5%	5.5%	5.5%
10	EI Paso Electric	10.0%	6.3%	4.9%	4.8%	3.4%	5.9%	4.0%	4.0%	4.0%	4.0%
11	Entergy Corp.	8.4%	5.2%	3.0%	4.4%	4.8%	5.2%	6.5%	3.5%	3.5%	4.5%
12	Great Plains Energy	2.0%	2.2%	3.2%	2.7%	1.6%	2.3%	1.5%	2.5%	3.0%	2.3%
13	IDACORP Inc.	6.5%	5.7%	5.6%	5.4%	4.8%	5.6%	4.5%	4.0%	3.5%	4.0%
14	MGE Energy	4.7%	4.9%	6.1%	6.4%	4.5%	5.3%	5.0%	5.5%	7.0%	5.8%
15	NextEra Energy	7.4%	5.6%	5.2%	6.0%	6.1%	6.1%	2.0%	4.0%	3.0%	3.0%
16	OGE Energy	7.7%	7.2%	7.3%	6.5%	4.0%	6.5%	3.5%	3.5%	3.0%	3.3%
17	Otter Tail Corp.	NMF	NMF	1.2%	2.2%	2.0%	1.8%	1.5%	2.0%	3.5%	2.3%
18	PG&E Corp.	3.4%	1.0%	0.2%	3.9%	0.7%	1.8%	3.0%	5.0%	4.5%	4.2%
19	Pinnacle West Capital	2.8%	4.1%	4.1%	3.5%	3.9%	3.7%	3.5%	3.5%	3.5%	3.5%
20	Portland General	4.1%	3.5%	2.9%	4.6%	3.3%	3.7%	3.5%	3.5%	3.5%	3.5%
21	Public Service Enterprise	8.6%	4.8%	4.4%	6.3%	6.8%	6.2%	4.5%	4.5%	4.5%	4.5%
22	SCANA Corp.	3.6%	3.9%	4.1%	4.9%	4.3%	4.2%	4.5%	4.5%	4.5%	4.5%
23	Sempra Energy	6.5%	5.1%	4.1%	5.0%	5.8%	5.3%	1.5%	4.0%	6.5%	4.0%
24	Vectren Corp.	1.9%	2.9%	1.2%	2.9%	4.2%	2.6%	4.0%	4.5%	5.5%	4.7%
25	Westar Energy	2.7%	4.0%	4.2%	4.3%	2.9%	3.6%	4.5%	4.5%	5.0%	4.7%
26	Xcel Energy, Inc.	4.3%	4.7%	4.5%	4.5%	4.3%	4.5%	4.0%	4.0%	4.0%	4.0%
27											
28	Average						4.28%				3.96%

Source:

Value Line Investment Survey - September 16, 2016 (See Attachment 1)

Value Line Investment Survey - October 28, 2016 (See Attachment 1)

Value Line Investment Survey - November 18, 2016 (See Attachment 1)

CAPITAL ASSET PRICING MODEL -- HISTORICAL MARKET RISK PREMIUM

Based on
RUCO's Electric Sample Companies

Line No	Proxy Group Companies	[A] Risk Free Rate	[B] BETA	[C] Market Risk Premium	[D] Beta x Market Risk Premium	[E] Estimated Cost of Equity
1	ALLETE	2.57%	0.75 X	6.87%	= 5.15%	7.72%
2	Alliant Energy	2.57%	0.75 X	6.87%	= 5.15%	7.72%
3	American Electric Power	2.57%	0.65 X	6.87%	= 4.46%	7.03%
4	Ameren Corp.	2.57%	0.70 X	6.87%	= 4.81%	7.38%
5	CMS Energy Corp.	2.57%	0.65 X	6.87%	= 4.46%	7.03%
6	Consolidated Edison	2.57%	0.55 X	6.87%	= 3.78%	6.35%
7	Dominion Resources	2.57%	0.65 X	6.87%	= 4.46%	7.03%
8	DTE Energy	2.57%	0.70 X	6.87%	= 4.81%	7.38%
9	Edison International	2.57%	0.65 X	6.87%	= 4.46%	7.03%
10	El Paso Electric	2.57%	0.70 X	6.87%	= 4.81%	7.38%
11	Entergy Corp.	2.57%	0.65 X	6.87%	= 4.46%	7.03%
12	Great Plains Energy	2.57%	0.75 X	6.87%	= 5.15%	7.72%
13	IDACORP Inc.	2.57%	0.75 X	6.87%	= 5.15%	7.72%
14	MGE Energy	2.57%	0.70 X	6.87%	= 4.81%	7.38%
15	NextEra Energy	2.57%	0.65 X	6.87%	= 4.46%	7.03%
16	OGE Energy	2.57%	0.90 X	6.87%	= 6.18%	8.75%
17	Otter Tail Corp.	2.57%	0.85 X	6.87%	= 5.84%	8.41%
18	PG&E Corp.	2.57%	0.65 X	6.87%	= 4.46%	7.03%
19	Pinnacle West Capital	2.57%	0.70 X	6.87%	= 4.81%	7.38%
20	Portland General	2.57%	0.70 X	6.87%	= 4.81%	7.38%
21	Public Service Enterprise	2.57%	0.70 X	6.87%	= 4.81%	7.38%
22	SCANA Corp.	2.57%	0.70 X	6.87%	= 4.81%	7.38%
23	Sempra Energy	2.57%	0.80 X	6.87%	= 5.49%	8.06%
24	Vectren Corp.	2.57%	0.75 X	6.87%	= 5.15%	7.72%
25	Westar Energy	2.57%	0.70 X	6.87%	= 4.81%	7.38%
26	Xcel Energy, Inc.	2.57%	0.60 X	6.87%	= 4.12%	6.69%
27	Sample Average		0.704			7.40%

CAPITAL ASSET PRICING MODEL -- HISTORICAL MARKET RISK PREMIUM

Based on
RUCO's Nuclear Subsample Companies

Line No						
1	Alliant Energy	2.57%	0.75 X	6.87%	= 5.15%	7.72%
2	Ameren Corp.	2.57%	0.70 X	6.87%	= 4.81%	7.38%
3	Dominion Resources	2.57%	0.65 X	6.87%	= 4.46%	7.03%
4	DTE Energy	2.57%	0.70 X	6.87%	= 4.81%	7.38%
5	Entergy Corp.	2.57%	0.65 X	6.87%	= 4.46%	7.03%
6	NextEra Energy	2.57%	0.65 X	6.87%	= 4.46%	7.03%
7	PG&E Corp.	2.57%	0.65 X	6.87%	= 4.46%	7.03%
8	Pinnacle West Capital	2.57%	0.70 X	6.87%	= 4.81%	7.38%
9	Public Service Enterprise	2.57%	0.70 X	6.87%	= 4.81%	7.38%
10	SCANA Corp.	2.57%	0.70 X	6.87%	= 4.81%	7.38%
11	Subsample Average		0.685			7.28%

20 year Treasury Bonds

September, 2016
October, 2016
November, 2016
Average

30 year Treasury Bonds

2.35%
2.50%
2.86%
2.57%

RUCO Risk-Free Rate

2.57%

REFERENCES

Column [A]: Federal Reserve Selected Interest Rates H.15 - Attachment 2
Column [B]: Value Line Investment Survey - January 15, 2016 - Attachment 1
Column [C]: JAC - 4, Page 2 of 2
Column [D]: [B] * [C]
Column [E]: [A] + [D]

RISK PREMIUMS BASED ON
STANDARD & POOR'S 500 COMPOSITE RETURNS and
20-YEAR U.S. TREASURY BOND YIELDS

Line		[A]	[B]	[C]	[D]	[E]
No.	Year	EPS	BVPS	ROE	20-YEAR T-BOND	RISK PREMIUM
1	1977		\$79.07			
2	1978	\$12.33	\$85.35	15.00%	7.90%	7.10%
3	1979	\$14.86	\$94.27	16.55%	8.86%	7.69%
4	1980	\$14.82	\$102.48	15.06%	9.97%	5.09%
5	1981	\$15.36	\$109.43	14.50%	11.55%	2.95%
6	1982	\$12.64	\$112.46	11.39%	13.50%	-2.11%
7	1983	\$14.03	\$116.93	12.23%	10.38%	1.85%
8	1984	\$16.64	\$122.47	13.90%	11.74%	2.16%
9	1985	\$14.61	\$125.20	11.80%	11.25%	0.55%
10	1986	\$14.48	\$126.82	11.49%	8.98%	2.51%
11	1987	\$17.50	\$134.07	13.42%	7.92%	5.50%
12	1988	\$23.75	\$141.32	17.25%	8.97%	8.28%
13	1989	\$22.87	\$147.26	15.85%	8.81%	7.04%
14	1990	\$21.73	\$153.01	14.47%	8.19%	6.28%
15	1991	\$16.29	\$158.85	10.45%	8.22%	2.23%
16	1992	\$18.86	\$149.74	12.22%	7.29%	4.93%
17	1993	\$21.89	\$180.88	13.24%	7.17%	6.07%
18	1994	\$30.60	\$193.06	16.37%	6.59%	9.78%
19	1995	\$33.96	\$216.51	16.58%	7.60%	8.98%
20	1996	\$38.73	\$237.08	17.08%	6.83%	10.25%
21	1997	\$39.72	\$249.52	16.33%	6.69%	9.64%
22	1998	\$37.71	\$266.40	14.62%	5.72%	8.90%
23	1999	\$48.17	\$290.68	17.29%	6.20%	11.09%
24	2000	\$50.00	\$325.80	16.22%	6.23%	9.99%
25	2001	\$24.70	\$338.37	7.44%	5.63%	1.81%
26	2002	\$27.59	\$321.72	8.36%	5.43%	2.93%
27	2003	\$48.73	\$367.17	14.15%	4.96%	9.19%
28	2004	\$58.55	\$414.75	14.98%	5.04%	9.94%
29	2005	\$69.93	\$453.06	16.12%	4.64%	11.48%
30	2006	\$81.51	\$504.39	17.03%	5.00%	12.03%
31	2007	\$66.18	\$529.59	12.80%	4.91%	7.89%
32	2008	\$14.88	\$451.37	3.03%	4.36%	-1.33%
33	2009	\$50.97	\$513.58	10.56%	4.11%	6.45%
34	2010	\$77.35	\$579.14	14.16%	4.03%	10.13%
35	2011	\$86.95	\$613.14	14.59%	3.62%	10.97%
36	2012	\$86.51	\$666.97	13.52%	2.54%	10.98%
37	2013	\$100.20	\$715.84	14.49%	3.12%	11.37%
38	2014	\$102.31	\$726.96	14.18%	3.07%	11.11%
39	2015	\$86.53	\$737.54	11.82%	2.55%	9.27%
40	Average			13.70%	6.83%	6.87%

[A]: Diluted earnings per share on the S&P 500 Composite Index.

[B]: Book value per share on the S&P 500 Composite Index.

[C]: Average of current- and prior year [B] / current year [A].

[D]: Annual income returns on 20-year U.S. Treasury bonds.

[E]: [C] - [D]

Sources for [A] and [B]: Standard & Poor's 2015 Analysts' Handbook and

https://ycharts.com/indicators/reports/sp_500_earnings

Source for [D]: Morningstar 2015 Classic Yearbook (Table A-7) and
U.S. Department of the Treasury

<https://www.treasury.gov/Pages/default.aspx>

COMPARABLE EARNINGS ANALYSIS
RETURN ON COMMON EQUITY FOR RUCO'S ELECTRIC SAMPLE COMPANIES

Company	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2019 - 2021	10-Year Historical Average 2006-2015	5-Year Historical Average 2011-2015	5-Year Projected Average 2016-2020
ALLETE	11.6%	11.8%	10.0%	6.6%	7.7%	8.7%	8.1%	7.8%	7.8%	9.0%	8.0%	8.5%	8.5%	8.9%	8.3%	8.3%
Alliant Energy	9.1%	11.3%	9.3%	6.8%	9.9%	9.5%	10.3%	11.3%	10.9%	10.0%	11.0%	11.0%	12.5%	9.8%	10.4%	11.5%
American Electric Power	12.0%	11.4%	11.3%	10.4%	9.1%	10.3%	9.5%	9.6%	9.7%	9.9%	10.0%	10.0%	9.5%	10.3%	9.8%	9.8%
Ameren Corp.	8.1%	9.2%	8.7%	7.8%	8.6%	7.5%	8.8%	7.8%	8.7%	8.3%	9.0%	9.0%	9.5%	8.4%	8.2%	9.2%
CMS Energy Corp.	6.4%	7.2%	11.7%	8.5%	12.5%	12.6%	12.9%	13.1%	13.0%	13.3%	13.0%	13.5%	13.5%	11.1%	13.0%	13.3%
Consolidated Edison	9.2%	10.4%	9.5%	8.4%	8.9%	9.2%	9.6%	9.4%	8.5%	9.1%	8.5%	8.5%	8.5%	9.2%	9.2%	8.5%
Dominion Resources	13.1%	14.9%	17.5%	14.0%	14.2%	13.9%	14.9%	15.4%	15.4%	15.0%	15.0%	15.0%	19.0%	14.8%	14.9%	16.3%
DTE Energy	7.5%	7.7%	7.4%	8.5%	9.4%	8.9%	9.0%	8.3%	10.9%	9.1%	9.5%	10.0%	10.0%	8.7%	9.2%	9.8%
Edison International	14.0%	13.0%	12.8%	10.8%	10.4%	10.5%	15.9%	12.5%	13.0%	12.0%	11.0%	11.0%	11.5%	12.5%	12.8%	11.2%
El Paso Electric	10.6%	11.2%	11.2%	9.3%	11.1%	13.6%	11.0%	9.4%	9.3%	8.1%	8.5%	9.0%	9.0%	10.5%	10.3%	8.8%
Entergy Corp.	13.8%	14.4%	15.3%	14.3%	14.7%	15.0%	11.6%	9.2%	10.4%	11.2%	12.5%	9.5%	10.0%	13.0%	11.5%	10.7%
Great Plains Energy	9.4%	10.1%	4.6%	4.8%	7.3%	5.8%	5.9%	7.2%	6.7%	5.8%	5.5%	7.0%	7.5%	6.8%	6.3%	6.7%
IDACORP Inc.	8.9%	6.8%	7.6%	8.9%	9.3%	10.1%	9.8%	9.9%	9.9%	9.5%	9.0%	9.0%	9.0%	9.1%	9.8%	9.0%
MGE Energy	11.3%	11.4%	11.0%	10.2%	11.0%	11.1%	11.1%	12.1%	12.2%	10.3%	11.0%	11.0%	13.0%	11.2%	11.4%	11.7%
NextEra Energy	12.9%	12.2%	14.0%	12.5%	13.5%	13.5%	11.9%	11.4%	12.4%	12.2%	8.5%	11.0%	11.5%	12.7%	12.3%	10.3%
OGE Energy	14.1%	14.5%	12.2%	12.7%	12.9%	13.4%	12.8%	12.8%	12.2%	10.2%	10.0%	10.5%	11.5%	12.8%	12.3%	10.7%
Otter Tail Corp.	10.2%	10.2%	5.1%	3.8%	2.0%	2.7%	7.3%	9.3%	9.9%	9.7%	9.0%	9.0%	10.0%	7.0%	7.8%	9.3%
PG&E Corp.	12.7%	11.8%	12.6%	11.2%	9.7%	9.2%	6.7%	5.7%	9.1%	5.9%	8.0%	10.5%	11.0%	9.5%	7.3%	9.8%
Pinnacle West Capital	9.2%	8.5%	6.2%	6.9%	9.0%	8.6%	9.8%	9.7%	9.1%	9.5%	9.5%	10.0%	10.0%	8.7%	9.3%	9.8%
Portland General	5.8%	11.0%	6.4%	6.2%	7.9%	8.8%	8.2%	7.5%	9.2%	7.6%	8.0%	8.5%	9.0%	7.9%	8.3%	8.5%
Public Service Enterprise	13.8%	18.1%	19.0%	17.8%	16.2%	15.4%	11.5%	10.7%	12.5%	12.9%	10.5%	11.0%	11.0%	14.8%	12.6%	10.8%
SCANA Corp.	10.5%	10.8%	11.4%	10.2%	10.2%	10.0%	10.1%	10.1%	10.8%	10.0%	10.0%	10.0%	10.0%	10.4%	10.2%	10.0%
Sempra Energy	14.8%	13.5%	14.0%	13.1%	11.1%	11.0%	10.4%	9.6%	10.3%	11.1%	8.0%	10.5%	14.0%	11.9%	10.5%	10.8%
Vectren Corp.	9.3%	11.6%	9.5%	10.4%	9.3%	9.7%	10.4%	8.8%	10.4%	11.7%	11.5%	11.5%	13.0%	10.1%	10.2%	12.0%
Westar Energy	10.7%	9.2%	6.2%	6.3%	8.5%	7.7%	9.4%	9.6%	9.5%	8.0%	9.5%	9.0%	10.0%	8.5%	8.8%	9.5%
Xcel Energy, Inc.	9.7%	9.1%	9.2%	9.4%	8.9%	9.9%	10.2%	9.9%	10.0%	10.0%	10.0%	10.5%	11.0%	9.6%	10.0%	10.5%
Mean	10.7%	11.2%	10.5%	9.6%	10.1%	10.3%	10.3%	9.9%	10.5%	10.0%	9.8%	10.2%	10.9%	10.31%	10.18%	10.27%
Median	10.6%	11.3%	10.5%	9.4%	9.6%	10.0%	10.2%	9.6%	10.2%	10.0%	9.5%	10.0%	10.0%	9.98%	10.10%	9.92%
Average of Mean and Median														10.15%	10.14%	10.10%

Source: Value Line Investment Survey - September 16, 2016 (See Attachment 1)
Value Line Investment Survey - October 28, 2016 (See Attachment 1)
Value Line Investment Survey - November 18, 2016 (See Attachment 1)

Comparable Earnings Analysis Return on Common Equity for RUCO's Nuclear Subsample Companies														10-Year Historical Average 2006-2015	5-Year Historical Average 2011-2015	5-Year Projected Average 2016-2020	
Company	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2019 - 2021				
Alliant Energy	#	9.1%	11.3%	9.3%	6.8%	9.9%	9.5%	10.3%	11.3%	10.9%	10.0%	11.0%	11.0%	12.5%	9.8%	10.4%	11.5%
Ameren Corp.	#	8.1%	9.2%	8.7%	7.8%	8.6%	7.5%	8.8%	7.8%	8.7%	8.3%	9.0%	9.0%	9.5%	8.4%	8.2%	9.2%
Dominion Resources	#	13.1%	14.9%	17.5%	14.0%	14.2%	13.9%	14.9%	15.4%	15.4%	15.0%	15.0%	15.0%	19.0%	14.8%	14.9%	16.3%
DTE Energy	#	7.5%	7.7%	7.4%	8.5%	9.4%	8.9%	9.0%	8.3%	10.9%	9.1%	9.5%	10.0%	10.0%	8.7%	9.2%	9.8%
Entergy Corp.	#	13.8%	14.4%	15.3%	14.3%	14.7%	15.0%	11.6%	9.2%	10.4%	11.2%	12.5%	9.5%	10.0%	13.0%	11.5%	10.7%
NextEra Energy	#	12.9%	12.2%	14.0%	12.5%	13.5%	13.5%	11.9%	11.4%	12.4%	12.2%	8.5%	11.0%	11.5%	12.7%	12.3%	10.3%
PG&E Corp.	#	12.7%	11.8%	12.6%	11.2%	9.7%	9.2%	6.7%	5.7%	9.1%	5.9%	8.0%	10.5%	11.0%	9.5%	7.3%	9.8%
Pinnacle West Capital	#	9.2%	8.5%	6.2%	6.9%	9.0%	8.6%	9.8%	9.7%	9.1%	9.5%	9.5%	10.0%	10.0%	8.7%	9.3%	9.8%
Public Service Enterprise	#	13.8%	18.1%	19.0%	17.8%	16.2%	15.4%	11.5%	10.7%	12.5%	12.9%	10.5%	11.0%	11.0%	14.8%	12.6%	10.8%
SCANA Corp.	#	10.5%	10.8%	11.4%	10.2%	10.2%	10.0%	10.1%	10.1%	10.8%	10.0%	10.0%	10.0%	10.0%	10.4%	10.2%	10.0%
Mean		11.1%	11.9%	12.1%	11.0%	11.5%	11.2%	10.5%	10.0%	11.0%	10.4%	10.4%	10.7%	11.5%	11.06%	10.60%	10.83%
Median		11.6%	11.6%	12.0%	10.7%	10.1%	9.8%	10.2%	9.9%	10.9%	10.0%	9.8%	10.3%	10.5%	10.13%	10.30%	10.17%
Average of Mean and Median															10.60%	10.45%	10.50%

ECONOMIC INDICATORS

Line No	Year	Real GDP Growth	Industrial Production Growth	Unemploy- ment Rate	Consumer Price Index	Producer Price Index
1	1975	-1.1%	-8.9%	8.5%	7.0%	6.6%
2	1976	5.4%	10.8%	7.7%	4.8%	3.7%
3	1977	5.5%	5.9%	7.0%	6.8%	6.9%
4	1978	5.0%	5.7%	6.0%	9.0%	9.2%
5	1979	2.8%	4.4%	5.8%	13.3%	12.8%
6	1980	-0.2%	-1.9%	7.0%	12.4%	11.8%
7	1981	1.8%	1.9%	7.5%	8.9%	7.1%
8	1982	-2.1%	-4.4%	9.5%	3.8%	3.6%
9	1983	4.0%	3.7%	9.5%	3.8%	0.6%
10	1984	6.8%	9.3%	7.5%	3.9%	1.7%
11	1985	3.7%	1.7%	7.2%	3.8%	1.8%
12	1986	3.1%	0.9%	7.0%	1.1%	-2.3%
13	1987	2.9%	4.9%	6.2%	4.4%	2.2%
14	1988	3.8%	4.5%	5.5%	4.4%	4.0%
15	1989	3.5%	1.8%	5.3%	4.6%	4.9%
16	1990	1.8%	-0.2%	5.6%	6.1%	5.7%
17	1991	-0.5%	-2.0%	6.8%	3.1%	-0.1%
18	1992	3.0%	3.1%	7.5%	2.9%	1.6%
19	1993	2.7%	3.4%	6.9%	2.7%	0.2%
20	1994	4.0%	5.5%	6.1%	2.7%	1.7%
21	1995	3.7%	4.8%	5.6%	2.5%	2.3%
22	1996	4.5%	4.3%	5.4%	3.3%	2.8%
23	1997	4.5%	7.3%	4.9%	1.7%	-1.2%
24	1998	4.2%	5.8%	4.5%	1.6%	0.0%
25	1999	3.7%	4.5%	4.2%	2.7%	2.9%
26	2000	4.1%	4.0%	4.0%	3.4%	3.6%
27	2001	1.1%	-3.4%	4.7%	1.6%	-1.6%
28	2002	1.8%	0.2%	5.8%	2.4%	1.2%
29	2003	2.8%	1.2%	6.0%	1.9%	4.0%
30	2004	3.8%	2.3%	5.5%	3.3%	4.2%
31	2005	3.3%	3.2%	5.1%	3.4%	5.4%
32	2006	2.7%	2.2%	4.6%	2.5%	1.1%
33	2007	1.8%	2.5%	4.6%	4.1%	6.2%
34	2008	-0.3%	-3.6%	5.8%	0.1%	-0.9%
35	2009	-2.8%	-11.5%	9.3%	2.7%	4.3%
36	2010	2.5%	5.5%	9.6%	1.5%	4.7%
37	2011	1.6%	2.9%	8.9%	3.0%	4.7%
38	2012	2.2%	2.8%	8.1%	1.7%	1.4%
39	2013	1.7%	1.9%	7.4%	1.5%	0.8%
40	2014	2.4%	2.9%	6.2%	0.8%	-1.2%
41	2015	2.6%	0.3%	5.3%	0.7%	-3.8%

Source: Council of Economic Advisors, Economic Indicators, various issues.

ECONOMIC INDICATORS

Line No	Year	Real GDP* Growth	Industrial Production Growth	Unemploy- ment Rate	Consumer Price Index	Producer Price Index
1	2003					
2	1st Qtr.	1.2%	1.1%	5.8%	4.8%	5.6%
3	2nd Qtr.	3.5%	-0.9%	6.2%	0.0%	-0.5%
4	3rd Qtr.	7.5%	-0.9%	6.1%	3.2%	3.2%
5	4th Qtr.	2.7%	1.5%	5.9%	-0.3%	2.8%
6	2004					
7	1st Qtr.	3.0%	2.8%	5.6%	5.2%	5.2%
8	2nd Qtr.	3.5%	4.9%	5.6%	4.4%	4.4%
9	3rd Qtr.	3.6%	4.6%	5.4%	0.8%	0.8%
10	4th Qtr.	2.5%	4.3%	5.4%	3.6%	7.2%
11	2005					
12	1st Qtr.	4.1%	3.8%	5.3%	4.4%	5.6%
13	2nd Qtr.	1.7%	3.0%	5.1%	1.6%	-0.4%
14	3rd Qtr.	3.1%	2.7%	5.0%	8.8%	14.0%
15	4th Qtr.	2.1%	2.9%	4.9%	-2.0%	4.0%
16	2006					
17	1st Qtr.	5.4%	3.4%	4.7%	4.8%	-0.2%
18	2nd Qtr.	1.4%	4.5%	4.6%	4.8%	5.6%
19	3rd Qtr.	0.1%	5.2%	4.7%	0.4%	-4.4%
20	4th Qtr.	3.0%	3.5%	4.5%	0.0%	3.6%
21	2007					
22	1st Qtr.	0.9%	2.5%	4.5%	4.8%	6.4%
23	2nd Qtr.	3.2%	1.6%	4.5%	5.2%	6.8%
24	3rd Qtr.	2.3%	1.8%	4.6%	1.2%	1.2%
25	4th Qtr.	2.9%	1.7%	4.8%	0.6%	6.5%
26	2008					
27	1st Qtr.	-1.8%	1.9%	4.9%	2.8%	9.6%
28	2nd Qtr.	1.3%	0.2%	5.3%	7.6%	14.0%
29	3rd Qtr.	-3.7%	-3.0%	6.0%	2.8%	-0.4%
30	4th Qtr.	-8.9%	6.0%	6.9%	-13.2%	-28.4%
31	2009					
32	1st Qtr.	-5.3%	-11.6%	8.1%	2.4%	-0.4%
33	2nd Qtr.	-0.3%	-12.9%	9.3%	3.2%	9.2%
34	3rd Qtr.	1.4%	-9.3%	9.6%	2.0%	-0.8%
35	4th Qtr.	4.0%	-4.5%	10.0%	2.5%	8.8%
36	2010					
37	1st Qtr.	1.6%	2.7%	9.7%	0.9%	6.5%
38	2nd Qtr.	3.9%	6.5%	9.7%	-1.2%	-2.4%
39	3rd Qtr.	2.8%	6.9%	9.6%	2.8%	4.0%
40	4th Qtr.	2.8%	6.2%	9.6%	2.8%	9.2%
41	2011					
42	1st Qtr.	-1.5%	5.4%	9.0%	4.8%	9.6%
43	2nd Qtr.	2.9%	3.6%	9.0%	3.2%	3.6%
44	3rd Qtr.	0.8%	3.3%	9.1%	2.4%	6.4%
45	4th Qtr.	4.6%	4.0%	8.7%	0.4%	-1.2%
46	2012					
47	1st Qtr.	2.3%	4.5%	8.3%	3.2%	2.0%
48	2nd Qtr.	1.6%	4.7%	8.2%	0.0%	-2.8%
49	3rd Qtr.	2.5%	3.4%	8.1%	4.0%	9.6%
50	4th Qtr.	0.1%	2.8%	7.8%	0.0%	-3.6%
51	2013					
52	1st Qtr.	1.9%	2.5%	7.7%	2.0%	1.2%
53	2nd Qtr.	1.1%	2.0%	7.6%	1.2%	2.4%
54	3rd Qtr.	3.0%	2.6%	7.3%	1.6%	0.0%
55	4th Qtr.	3.8%	3.3%	7.0%	1.2%	0.3%
56	2014					
57	1st Qtr.	-0.9%	3.2%	6.6%	1.6%	0.3%
58	2nd Qtr.	4.6%	4.2%	6.2%	3.6%	0.2%
59	3rd Qtr.	4.3%	4.7%	6.1%	0.0%	0.0%
60	4th Qtr.	2.1%	4.5%	5.7%	-2.8%	-0.8%
61	2015					
62	1st Qtr.	0.6%	3.5%	5.6%	-0.2%	-2.3%
63	2nd Qtr.	3.9%	1.5%	5.4%	0.6%	1.2%
64	3rd Qtr.	2.0%	1.1%	5.2%	0.0%	-1.8%
65	4th Qtr.	1.0%	-0.8%	5.0%	0.2%	-0.9%
66	2016					
67	1st Qtr.	0.80%	-1.6%	4.9%	1.10%	-0.4%
68	2nd Qtr.	1.40%	-1.1%	4.9%	1.03%	0.6%
69	3rd Qtr.	2.90% P	-1.0%	4.9%	1.13%	0.0%
70	4th Qtr.					

*GDP=Gross Domestic Product

P: Preliminary

Source: Council of Economic Advisors, Economic Indicators, various issues.

INTEREST RATES

Line No	Year	Prime	US Treasury T Bills	US Treasury T Bonds	Utility Bonds	Utility Bonds	Utility Bonds	Utility Bonds
		Rate	3 Month	10 Year	Aaa	Aa	A	Baa
1	1975	7.86%	5.84%	7.99%	9.03%	9.44%	10.09%	10.96%
2	1976	6.84%	4.99%	7.61%	8.63%	8.92%	9.29%	9.82%
3	1977	6.83%	5.27%	7.42%	8.19%	8.43%	8.61%	9.06%
4	1978	9.06%	7.22%	8.41%	8.87%	9.10%	9.29%	9.62%
5	1979	12.67%	10.04%	9.43%	9.86%	10.22%	10.49%	10.96%
6	1980	15.27%	11.51%	11.43%	12.30%	13.00%	13.34%	13.95%
7	1981	18.89%	14.03%	13.92%	14.64%	15.30%	15.95%	16.60%
8	1982	14.86%	10.69%	13.01%	14.22%	14.79%	15.86%	16.45%
9	1983	10.79%	8.63%	11.10%	12.52%	12.83%	13.66%	14.20%
10	1984	12.04%	9.58%	12.46%	12.72%	13.66%	14.03%	14.53%
11	1985	9.93%	7.48%	10.62%	11.68%	12.06%	12.47%	12.96%
12	1986	8.33%	5.98%	7.67%	8.92%	9.30%	9.58%	10.00%
13	1987	8.21%	5.82%	8.39%	9.52%	9.77%	10.10%	10.53%
14	1988	9.32%	6.69%	8.85%	10.05%	10.26%	10.49%	11.00%
15	1989	10.87%	8.12%	8.49%	9.32%	9.56%	9.77%	9.97%
16	1990	10.01%	7.51%	8.55%	9.45%	9.65%	9.86%	10.06%
17	1991	8.46%	5.42%	7.86%	8.85%	9.09%	9.36%	9.55%
18	1992	6.25%	3.45%	7.01%	8.19%	8.55%	8.69%	8.86%
19	1993	6.00%	3.02%	5.87%	7.29%	7.44%	7.59%	7.91%
20	1994	7.15%	4.29%	7.09%	8.07%	8.21%	8.31%	8.63%
21	1995	8.83%	5.51%	6.57%	7.68%	7.77%	7.89%	8.29%
22	1996	8.27%	5.02%	6.44%	7.48%	7.57%	7.75%	8.16%
23	1997	8.44%	5.07%	6.35%	7.43%	7.54%	7.60%	7.95%
24	1998	8.35%	4.81%	5.26%	6.77%	6.91%	7.04%	7.26%
25	1999	8.00%	4.66%	5.65%	7.21%	7.51%	7.62%	7.88%
26	2000	9.23%	5.85%	6.03%	7.88%	8.06%	8.24%	8.36%
27	2001	6.91%	3.44%	5.02%	7.47%	7.59%	7.78%	8.02%
28	2002	4.67%	1.62%	4.61%	[1]	7.19%	7.37%	8.02%
29	2003	4.12%	1.01%	4.01%		6.40%	6.58%	6.84%
30	2004	4.34%	1.38%	4.27%		6.04%	6.16%	6.40%
31	2005	6.19%	3.16%	4.29%		5.44%	5.65%	5.93%
32	2006	7.96%	4.73%	4.80%		5.84%	6.07%	6.32%
33	2007	8.05%	4.41%	4.63%		5.94%	6.07%	6.33%
34	2008	5.09%	1.48%	3.66%		6.18%	6.53%	7.25%
35	2009	3.25%	0.16%	3.26%		5.75%	6.04%	7.06%
36	2010	3.25%	0.14%	3.22%		5.24%	5.46%	5.96%
37	2011	3.25%	0.06%	2.78%		4.78%	5.04%	5.57%
38	2012	3.25%	0.09%	1.80%		3.83%	4.13%	4.86%
39	2013	3.25%	0.06%	2.35%		4.24%	4.47%	4.98%
40	2014	3.25%	0.03%	2.54%		4.19%	4.28%	4.80%
41	2015	3.27%	0.05%	2.14%		4.00%	4.12%	5.03%
42	2016	3.50%	0.29%	1.75%				

[1] Note: Moody's has not published Aaa utility bond yields since 2001.

Sources: Council of Economic Advisors, Economic Indicators; Moody's Bond Record; Federal Reserve Bulletin; various issues.

Note: Figures for 2016 are year-to-date averages (January - October, 2016)

INTEREST RATES

Line No	US Treasury					Line No	US Treasury					Line No	US Treasury					Line No	US Treasury				
	Prime Rate	T Bills 3 Month	T Bonds 10 Year	Utility Bonds A	Utility Bonds Baa		Prime Rate	T Bills 3 Month	T Bonds 10 Year	Utility Bonds A	Utility Bonds Baa		Prime Rate	T Bills 3 Month	T Bonds 10 Year	Utility Bonds A	Utility Bonds Baa		Prime Rate	T Bills 3 Month	T Bonds 10 Year	Utility Bonds A	Utility Bonds Baa
1	2007	8.25%	4.96%	4.76%	5.78%	1	2011	3.25%	0.15%	3.39%	5.29%	1	2016	3.25%	0.03%	1.88%	3.52%	3.58%	4.39%	3.52%	3.58%		
2	Jan	8.25%	5.02%	4.72%	5.73%	2	Jan	3.25%	0.14%	3.35%	5.24%	2	Jan	3.25%	0.02%	1.88%	3.52%	3.67%	4.44%	3.52%	3.67%		
3	Feb	8.25%	4.97%	4.69%	5.65%	3	Feb	3.25%	0.06%	3.41%	5.33%	3	Feb	3.25%	0.03%	1.94%	3.67%	3.74%	4.51%	3.67%	3.74%		
4	Mar	8.25%	4.86%	4.69%	5.83%	4	Mar	3.25%	0.05%	3.46%	5.32%	4	Mar	3.25%	0.02%	2.04%	3.63%	3.75%	4.51%	3.63%	3.75%		
5	Apr	8.25%	4.77%	4.75%	5.85%	5	Apr	3.25%	0.04%	3.17%	5.08%	5	Apr	3.25%	0.02%	2.20%	4.05%	4.17%	4.91%	4.05%	4.17%		
6	May	8.25%	4.63%	5.10%	6.18%	6	May	3.25%	0.04%	3.00%	5.04%	6	May	3.25%	0.02%	2.36%	4.29%	4.39%	5.13%	4.29%	4.39%		
7	June	8.25%	4.84%	5.00%	6.11%	7	June	3.25%	0.03%	3.00%	5.05%	7	June	3.25%	0.03%	2.32%	4.27%	4.40%	5.23%	4.27%	4.40%		
8	July	8.25%	4.34%	4.67%	6.24%	8	July	3.25%	0.05%	2.30%	4.44%	8	July	3.25%	0.07%	2.17%	4.13%	4.25%	5.23%	4.13%	4.25%		
9	Aug	8.25%	4.01%	4.52%	6.18%	9	Aug	3.25%	0.02%	1.98%	4.24%	9	Aug	3.25%	0.02%	2.17%	4.25%	4.39%	5.42%	4.25%	4.39%		
10	Sept	7.75%	3.97%	4.53%	6.04%	10	Sept	3.25%	0.02%	2.15%	4.21%	10	Sept	3.25%	0.02%	2.07%	4.13%	4.29%	5.47%	4.13%	4.29%		
11	Oct	7.50%	3.49%	4.15%	5.87%	11	Oct	3.25%	0.01%	2.01%	3.92%	11	Oct	3.25%	0.13%	2.26%	4.22%	4.40%	5.57%	4.22%	4.40%		
12	Nov	7.50%	3.08%	4.10%	6.03%	12	Nov	3.25%	0.02%	1.98%	4.00%	12	Nov	3.25%	0.23%	2.24%	4.16%	4.35%	5.55%	4.23%	4.35%		
13	Dec	7.25%				13	Dec	3.25%				13	Dec										
14	2008					14	2012					14	2016										
15	Jan	6.00%	2.86%	3.74%	5.87%	15	Jan	3.25%	0.02%	1.97%	4.03%	15	Jan	3.50%	0.26%	2.09%	4.34%	4.35%	5.55%	4.34%	4.35%		
16	Feb	6.00%	2.21%	3.74%	6.04%	16	Feb	3.25%	0.08%	1.97%	4.02%	16	Feb	3.50%	0.31%	1.78%	4.36%	4.36%	5.55%	4.36%	4.36%		
17	Mar	5.25%	1.38%	3.51%	5.69%	17	Mar	3.25%	0.09%	2.17%	4.16%	17	Mar	3.50%	0.30%	1.89%	4.48%	4.48%	5.55%	4.48%	4.48%		
18	Apr	5.00%	1.32%	3.68%	6.29%	18	Apr	3.25%	0.08%	2.05%	4.10%	18	Apr	3.50%	0.19%	1.81%	4.40%	4.40%	5.55%	4.40%	4.40%		
19	May	5.00%	1.71%	3.88%	6.07%	19	May	3.25%	0.09%	1.80%	3.92%	19	May	3.50%	0.28%	1.81%	4.20%	4.20%	5.55%	4.20%	4.20%		
20	June	5.00%	1.90%	4.10%	6.19%	20	June	3.25%	0.09%	1.62%	3.75%	20	June	3.50%	0.27%	1.64%	4.08%	4.08%	5.55%	4.08%	4.08%		
21	July	5.00%	1.72%	4.01%	6.38%	21	July	3.25%	0.10%	1.53%	3.58%	21	July	3.50%	0.30%	1.50%	3.93%	3.93%	5.55%	3.93%	3.93%		
22	Aug	5.00%	1.79%	3.89%	6.09%	22	Aug	3.25%	0.11%	1.68%	3.65%	22	Aug	3.50%	0.30%	1.56%	4.00%	4.00%	5.55%	4.00%	4.00%		
23	Sept	5.00%	1.46%	3.69%	6.13%	23	Sept	3.25%	0.10%	1.72%	3.69%	23	Sept	3.50%	0.29%	1.63%	4.02%	4.02%	5.55%	4.02%	4.02%		
24	Oct	4.00%	0.84%	3.61%	6.85%	24	Oct	3.25%	0.10%	1.75%	3.68%	24	Oct	3.50%	0.33%	1.76%	3.91%	3.91%	5.55%	3.91%	3.91%		
25	Nov	4.00%	0.30%	3.53%	7.60%	25	Nov	3.25%	0.11%	1.65%	3.60%	25	Nov	3.50%	0.33%	1.76%	3.84%	3.84%	5.55%	3.84%	3.84%		
26	Dec	3.25%	0.04%	2.42%	5.93%	26	Dec	3.25%	0.08%	1.72%	3.75%	26	Dec	3.50%	0.33%	1.76%	4.00%	4.00%	5.55%	4.00%	4.00%		
27	2009					27	2013					27	2017										
28	Jan	3.25%	0.12%	2.52%	6.01%	28	Jan	3.25%	0.07%	1.91%	3.90%	28	Jan	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
29	Feb	3.25%	0.31%	2.87%	6.11%	29	Feb	3.25%	0.10%	1.98%	3.95%	29	Feb	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
30	Mar	3.25%	0.25%	2.82%	6.14%	30	Mar	3.25%	0.09%	1.96%	3.90%	30	Mar	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
31	Apr	3.25%	0.17%	2.93%	6.20%	31	Apr	3.25%	0.06%	1.76%	3.74%	31	Apr	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
32	May	3.25%	0.15%	3.29%	6.23%	32	May	3.25%	0.05%	1.93%	3.91%	32	May	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
33	June	3.25%	0.17%	3.72%	6.13%	33	June	3.25%	0.05%	2.30%	4.27%	33	June	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
34	July	3.25%	0.19%	3.56%	5.97%	34	July	3.25%	0.04%	2.58%	4.44%	34	July	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
35	Aug	3.25%	0.18%	3.59%	5.83%	35	Aug	3.25%	0.04%	2.74%	4.53%	35	Aug	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
36	Sept	3.25%	0.13%	3.40%	5.15%	36	Sept	3.25%	0.02%	2.81%	4.58%	36	Sept	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
37	Oct	3.25%	0.08%	3.39%	5.23%	37	Oct	3.25%	0.06%	2.62%	4.48%	37	Oct	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
38	Nov	3.25%	0.05%	3.40%	5.33%	38	Nov	3.25%	0.07%	2.72%	4.56%	38	Nov	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
39	Dec	3.25%	0.07%	3.59%	5.52%	39	Dec	3.25%	0.07%	2.90%	4.59%	39	Dec	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
40	2010					40	2014					40	2018										
41	Jan	3.25%	0.06%	3.73%	5.55%	41	Jan	3.25%	0.05%	2.86%	4.44%	41	Jan	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
42	Feb	3.25%	0.10%	3.89%	5.77%	42	Feb	3.25%	0.06%	2.71%	4.38%	42	Feb	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
43	Mar	3.25%	0.15%	3.73%	5.64%	43	Mar	3.25%	0.05%	2.72%	4.40%	43	Mar	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
44	Apr	3.25%	0.15%	3.85%	5.62%	44	Apr	3.25%	0.04%	2.71%	4.30%	44	Apr	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
45	May	3.25%	0.16%	3.42%	5.29%	45	May	3.25%	0.03%	2.56%	4.16%	45	May	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
46	June	3.25%	0.12%	3.20%	5.22%	46	June	3.25%	0.03%	2.60%	4.23%	46	June	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
47	July	3.25%	0.16%	3.01%	4.99%	47	July	3.25%	0.03%	2.54%	4.16%	47	July	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
48	Aug	3.25%	0.15%	2.70%	4.75%	48	Aug	3.25%	0.03%	2.42%	4.07%	48	Aug	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
49	Sept	3.25%	0.15%	2.65%	4.74%	49	Sept	3.25%	0.02%	2.53%	4.16%	49	Sept	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
50	Oct	3.25%	0.13%	2.54%	4.89%	50	Oct	3.25%	0.02%	2.30%	3.96%	50	Oct	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
51	Nov	3.25%	0.13%	2.76%	5.12%	51	Nov	3.25%	0.02%	2.33%	4.03%	51	Nov	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		
52	Dec	3.25%	0.15%	3.28%	5.32%	52	Dec	3.25%	0.04%	2.21%	3.96%	52	Dec	3.50%	0.33%	1.76%	4.15%	4.15%	5.55%	4.15%	4.15%		

[1] Note: Moody's has not published Aaa utility bond yields since 2001.

Sources: Council of Economic Advisors, Economic Indicators, Moody's Bond Record, Federal Reserve Bulletin, various issues

STOCK PRICE INDICATORS

Line		S&P	NASDAQ		S&P	S&P
No	Year	Composite	Composite	DJIA	Dividend/Price Ratio	Earnings/Price Ratio
1	1975			802.49	4.31%	9.15%
2	1976			974.92	3.77%	8.90%
3	1977			894.63	4.62%	10.79%
4	1978			820.23	5.28%	12.03%
5	1979			844.40	5.47%	13.46%
6	1980			891.41	5.26%	12.66%
7	1981			932.92	5.20%	11.96%
8	1982			884.36	5.81%	11.60%
9	1983			1,190.34	4.40%	8.03%
10	1984			1,178.48	4.64%	10.02%
11	1985			1,328.23	4.25%	8.12%
12	1986			1,792.76	3.49%	6.09%
13	1987			2,275.99	3.08%	5.48%
14	1988			2,060.82	3.64%	8.01%
15	1989	322.84		2,508.91	3.45%	7.41%
16	1990	334.59		2,678.94	3.61%	6.47%
17	1991	376.18	491.69	2,929.33	3.24%	4.79%
18	1992	415.74	\$599.26	3,284.29	2.99%	4.22%
19	1993	451.21	715.16	3,522.06	2.78%	4.46%
20	1994	460.42	751.65	3,793.77	2.82%	5.83%
21	1995	541.72	925.19	4,493.76	2.56%	6.09%
22	1996	670.50	1,164.96	5,742.89	2.19%	5.24%
23	1997	873.43	1,469.49	7,441.15	1.77%	4.57%
24	1998	1,085.50	1,794.91	8,625.52	1.49%	3.46%
25	1999	1,327.33	2,728.15	10,464.88	1.25%	3.17%
26	2000	1,427.22	2,783.67	10,734.90	1.15%	3.63%
27	2001	1,194.18	2,035.00	10,189.13	1.32%	2.95%
28	2002	993.94	1,539.73	9,226.43	1.61%	2.92%
29	2003	965.23	1,647.17	8,993.59	1.77%	3.84%
30	2004	1,130.65	1,986.53	10,317.39	1.72%	4.89%
31	2005	1,207.06	2,099.03	10,547.67	1.83%	5.36%
32	2006	1,310.67	2,265.17	11,408.67	1.87%	5.78%
33	2007	1,476.66	2,577.12	13,169.98	1.86%	5.29%
34	2008	1,220.89	2,162.46	11,252.61	2.37%	3.54%
35	2009	946.73	1,841.03	8,876.15	2.40%	1.86%
36	2010	1,139.31	2,347.70	10,662.80	1.98%	6.04%
37	2011	1,268.89	2,680.42	11,966.36	2.05%	6.77%
38	2012	1,379.56	2,965.77	12,967.08	2.24%	6.20%
39	2013	1,462.51	3,537.69	14,999.67	2.14%	5.57%
40	2014	1,930.67	4,374.31	16,773.99	2.04%	5.25%
41	2015	2,061.20	4,940.49	17,590.61	2.10%	4.59%

Source: Council of Economic Advisors, Economic Indicators, various issues.

STOCK PRICE INDICATORS

Line No		<u>S&P Composite</u>	<u>NASDAQ Composite</u>	<u>DJIA</u>	<u>S&P Dividends/Price Ratio</u>	<u>S&P Earnings/Price Ratio</u>
1	2004					
2	1st Qtr.	1,133.29	2,041.95	10,488.43	1.64%	4.62%
3	2nd Qtr.	1,122.87	1,984.13	10,289.04	1.71%	4.92%
4	3rd Qtr.	1,104.15	1,872.90	10,129.85	1.79%	5.18%
5	4th Qtr.	1,162.07	2,050.22	10,362.25	1.75%	4.83%
6						
7	2005					
8	1st Qtr.	1,191.98	2,056.01	10,648.48	1.77%	5.11%
9	2nd Qtr.	1,181.65	2,012.24	10,382.35	1.85%	5.32%
10	3rd Qtr.	1,225.91	2,144.61	10,532.24	1.83%	5.42%
11	4th Qtr.	1,262.07	2,246.09	10,827.79	1.86%	5.60%
12						
13	2006					
14	1st Qtr.	1,283.04	2,287.97	10,996.04	1.85%	5.61%
15	2nd Qtr.	1,281.77	2,240.46	11,188.84	1.90%	5.86%
16	3rd Qtr.	1,288.40	2,141.97	11,274.49	1.91%	5.88%
17	4th Qtr.	1,389.48	2,390.26	12,175.30	1.81%	5.75%
18						
19	2007					
20	1st Qtr.	1,425.30	2,444.85	12,470.97	1.84%	5.85%
21	2nd Qtr.	1,496.43	2,552.37	13,214.26	1.82%	5.65%
22	3rd Qtr.	1,490.81	2,609.68	13,488.43	1.86%	5.15%
23	4th Qtr.	1,494.09	2,701.59	13,502.95	1.91%	4.51%
24						
25	2008					
26	1st Qtr.	1,350.19	2,332.91	12,383.86	2.11%	4.55%
27	2nd Qtr.	1,371.65	2,426.26	12,508.59	2.10%	4.05%
28	3rd Qtr.	1,251.94	2,290.87	11,322.40	2.29%	3.94%
29	4th Qtr.	909.80	1,599.64	8,795.61	2.98%	1.65%
30						
31	2009					
32	1st Qtr.	809.31	1,485.14	7,774.06	3.00%	0.86%
33	2nd Qtr.	892.23	1,731.41	8,327.83	2.45%	0.82%
34	3rd Qtr.	996.68	1,985.25	9,229.93	2.16%	1.19%
35	4th Qtr.	1,088.70	2,162.33	10,172.78	1.99%	4.57%
36						
37	2010					
38	1st Qtr.	1,121.60	2,274.88	10,454.42	1.94%	5.21%
39	2nd Qtr.	1,135.25	2,343.40	10,570.54	1.97%	6.51%
40	3rd Qtr.	1,096.39	2,237.97	10,390.24	2.09%	6.30%
41	4th Qtr.	1,204.00	2,534.62	11,236.02	1.95%	6.15%
42						
43	2011					
44	1st Qtr.	1,302.74	2,741.01	12,024.62	1.85%	6.13%
45	2nd Qtr.	1,319.04	2,766.64	12,370.73	1.97%	6.35%
46	3rd Qtr.	1,237.12	2,613.11	11,671.47	2.15%	7.69%
47	4th Qtr.	1,225.65	2,600.91	11,798.65	2.25%	6.91%
48						
49	2012					
50	1st Qtr.	1,347.44	2,902.90	12,839.80	2.12%	6.29%
51	2nd Qtr.	1,350.39	2,928.62	12,765.58	2.30%	6.45%
52	3rd Qtr.	1,402.21	3,029.86	13,118.72	2.27%	6.00%
53	4th Qtr.	1,418.21	3,001.69	13,142.91	2.28%	6.07%
54						
55	2013					
56	1st Qtr.	1,514.41	3,177.10	14,000.30	2.21%	5.59%
57	2nd Qtr.	1,609.77	3,369.49	14,961.28	2.15%	5.66%
58	3rd Qtr.	1,675.31	3,643.63	15,255.25	2.14%	5.65%
59	4th Qtr.	1,770.45	3,960.54	15,751.96	2.06%	5.42%
60						
61	2014					
62	1st Qtr.	1,834.30	4,210.05	16,170.26	2.04%	5.39%
63	2nd Qtr.	1,900.37	4,195.81	16,603.50	2.06%	5.26%
64	3rd Qtr.	1,975.95	4,483.51	16,953.85	2.02%	5.38%
65	4th Qtr.	2012.04	4607.88	17368.36	2.03%	4.97%
66						
67	2015					
68	1st Qtr.	2063.46	4821.99	17806.47	2.02%	4.80%
69	2nd Qtr.	2102.03	5017.47	18007.48	2.05%	4.60%
70	3rd Qtr.	2,026.14	4,921.81	17,065.52	2.16%	4.72%
71	4th Qtr.	2,053.17	5,000.70	17,482.97	2.16%	4.23%
72						
73	2016					
74	1st Qtr.	1948.32	4609.47	16,635.76	2.31%	4.20%
75	2nd Qtr.	2074.99	4845.55	17,763.85	2.19%	4.14%
76	3rd Qtr.	2161.36	5165.06	18,367.92	2.13%	4.13%
77	4th Qtr.					

Source: Council of Economic Advisors, Economic Indicators, various issues.

PROXY GROUP COMMON EQUITY RATIOS

	Company	2010	2011	2012	2013	2014	2015
1	ALLETE	55.8%	55.7%	56.3%	55.4%	55.8%	53.7%
2	Alliant Energy	49.5%	50.9%	48.4%	50.8%	47.5%	51.4%
3	American Electric Power	46.7%	49.3%	49.4%	48.9%	51.0%	50.2%
4	Ameren Corp.	50.9%	53.7%	49.4%	53.7%	51.7%	49.7%
5	CMS Energy Corp.	29.5%	32.6%	31.6%	32.2%	31.0%	31.4%
6	Consolidated Edison	50.4%	52.5%	54.1%	53.9%	52.0%	52.1%
7	Dominion Resources	42.8%	39.3%	38.2%	37.3%	34.6%	34.9%
8	DTE Energy	48.7%	49.4%	51.2%	52.3%	50.0%	49.8%
9	Edison International	44.3%	40.6%	46.2%	46.2%	47.2%	46.7%
10	El Paso Electric	48.8%	48.2%	45.2%	48.6%	46.5%	47.3%
11	Entergy Corp.	42.1%	46.4%	42.9%	43.6%	43.8%	40.8%
12	Great Plains Energy	49.2%	51.6%	54.4%	49.4%	50.4%	49.1%
13	IDACORP Inc.	50.7%	54.4%	54.5%	53.4%	54.7%	54.4%
14	MGE Energy	61.1%	60.4%	61.8%	60.7%	62.5%	64.0%
15	NextEra Energy	44.5%	41.8%	40.9%	42.9%	45.0%	45.8%
16	OGE Energy	49.2%	48.4%	49.3%	56.9%	54.1%	55.7%
17	Otter Tail Corp.	58.4%	54.0%	54.4%	57.9%	53.5%	57.6%
18	PG&E Corp.	49.3%	50.2%	50.4%	52.5%	50.7%	50.4%
19	Pinnacle West Capital	54.7%	55.9%	55.4%	60.0%	59.0%	57.0%
20	Portland General	47.0%	50.4%	52.9%	48.7%	47.3%	52.2%
21	Public Service Enterprise	55.2%	57.9%	61.7%	59.6%	59.6%	59.7%
22	SCANA Corp.	47.1%	45.7%	45.6%	46.4%	47.4%	48.1%
23	Sempra Energy	49.6%	49.2%	46.7%	49.4%	48.2%	47.3%
24	Vectren Corp.	50.1%	48.4%	49.6%	46.7%	53.3%	49.4%
25	Westar Energy	46.0%	50.1%	48.8%	50.0%	50.0%	52.5%
26	Xcel Energy, Inc.	46.3%	48.9%	46.7%	46.7%	47.0%	45.9%
27							
28	Electric Sample Average	48.8%	49.5%	49.5%	50.2%	49.8%	49.9%
29							
30	Nuclear Subsample Average	48.5%	49.1%	48.4%	49.9%	48.9%	48.8%
31							
32	Electric Sample w/o PWC	48.5%	49.2%	49.2%	49.8%	49.4%	49.6%
33							
34	Nuclear Subsample w/o PWC	47.8%	48.4%	47.6%	48.8%	47.8%	47.8%

Sources:

Value Line Investment Survey - September 16, 2016 (See Attachment 1)

Value Line Investment Survey - October 28, 2016 (See Attachment 1)

Value Line Investment Survey - November 18, 2016 (See Attachment 1)

EXHIBIT JAC-A



Inflation Expectations

12.15.16

[Latest Release](#) [FAQs](#) [Archives](#) [Contact Us](#)

The Federal Reserve Bank of Cleveland's inflation expectations model uses Treasury yields, inflation data, inflation swaps, and survey-based measures of inflation expectations to calculate the expected inflation rate (CPI) over the next 30 years. The Cleveland Fed model is run every month on the date of the CPI release.

Latest Inflation Expectations Model Release (December 15, 2016)

The Federal Reserve Bank of Cleveland reports that its latest estimate of 10-year expected inflation is 1.93 percent. In other words, the public currently expects the inflation rate to be less than 2 percent on average over the next decade.

Historical Data

- **Excel** : This spreadsheet contains the inflation expectations model's output from 1982 to the present. Output includes expected inflation for horizons from 1 year to 30 years, the real risk premium, the inflation risk premium, and the real interest rate.
- **Archives**: View previous releases of inflation expectations going back to January 2015.

How to Interpret the Data

We report 10-year expected inflation, which is the rate that inflation is expected to average over the next 10 years.

We also provide the model's estimates of the inflation risk premium, the real risk premium, and the real interest rate (see the charts below and the Excel file above). The **inflation risk premium** is a measure of the premium investors require for the possibility that inflation may rise or fall more than they expect over the period in which they hold a bond. Similarly, the **real risk premium** is a measure of the compensation investors require for holding real (inflation-protected) bonds over some period, given the fact that future short-term rates might be different from what they

expect. Both the real risk premium and the inflation risk premium can be interpreted as investors' assessment of risk. In the case of the real risk premium, it is an assessment of the risk of unexpected changes in the real interest rate, and in the case of the inflation risk premium, it is an assessment of the risk of unexpected changes in inflation.

In figure 2 below we compare the model's estimate of 10-year real interest rates against TIPS yields. The figure can be interpreted as illustrating the importance of factors not in the model (taxes, liquidity, the embedded option) for the TIPS market. As TIPS are not used in the model, it also serves as a simple out-of-sample test for the model.

Figure 3, yield curve, shows the model's estimates for expected inflation at horizons of 1 to 30 years at three points in time: the current month, the previous month, and the previous year.

The Excel file also provides estimates of the 1-month and 1-year **real interest rate**. These estimates can be interpreted as the actual interest rate, minus inflation, over the next month or the next year.

Resources

- Inflation Expectations, Real Rates, and Risk Premia ④ : This working paper provides the technical details of the model.
- Inflation: Noise, Risk and Expectations ④ : This *Commentary* explains to a more general audience how the model's estimates are better than alternative approaches.
- A New Approach to Gauging Inflation Expectations ④ : This *Commentary* explains how the model is constructed and what it provides to a more general audience.

Charts

Ten-Year Expected Inflation and Real and Inflation Risk Premia



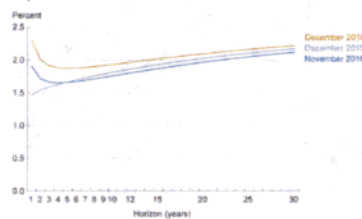
Source: "Inflation Expectations, Real Rates, and Risk Premia: Evidence from Inflation Swaps," Review of Financial Studies, vol. 25, no. 5, 2012.

Ten-Year TIPS Yields versus Real Yields



Source: "Inflation Expectations, Real Rates, and Risk Premia: Evidence from Inflation Swaps," Review of Financial Studies, vol. 25, no. 5, 2012.

Expected Inflation Term Structure



Source: "Inflation Expectations, Real Rates, and Risk Premia: Evidence from Inflation Swaps," Review of Financial Studies, vol. 25, no. 5, 2012.

Questions?

- For additional information, [contact us](#).
- To receive an email when new inflation expectations are posted, subscribe to our [alert](#).

Headlines

12.13.16

[Community Stabilization Index](#) ▶

[Brett Barkley](#)

Updated annually, the 2016 release of the Community Stabilization Index (CSI) shows improving housing market conditions in metro areas across the Federal Reserve Fourth District. Our analysis this year also features ongoing neighborhood development efforts in Canton, Cleveland, and Warren. [Read More](#) ▶

12.08.16

[Broadband and High-speed Internet Access in the Fourth District](#) ▶

[Kyle Fee](#) | [Shruthi Arvind](#)

This report documents the availability of high-speed internet access in the Fourth Federal Reserve District. While our analysis clearly shows there is limited broadband access in rural parts of the Fourth District, it shows that urban low- and moderate-income (LMI) areas also have limited access. [Read More](#) ▶

11.29.16

[The Fed's Yield-Curve-Control Policy](#) ▶

[Owen F. Humpage](#)

Because many central banks still face policy rates that are uncomfortably close to zero, they may consider adding a long-term interest-rate target to their short-term target to give themselves "yield-curve control." The Federal Reserve's foray into similar territory around the Second World War suggests doing so could create constraints on monetary policy that are not easily removed. [Read More](#) ▶

Upcoming Events

[SEE ALL](#)

12.01.16

[Financial Stability Conference](#)

The conference will bring together academics, policymakers, and market participants to discuss financial and technological innovations and their impact on financial stability.

12.07.16

[The Community Reinvestment Act \(CRA\) for Community Based Organizations](#)

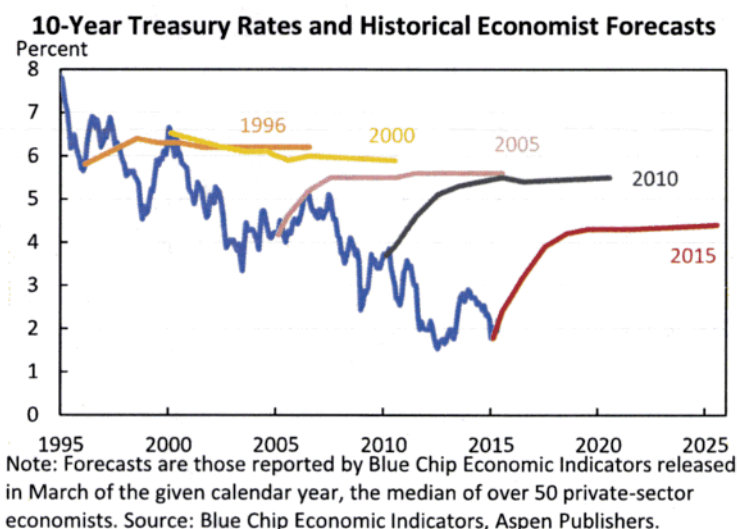
This session is designed for those with limited knowledge of CRA but are eager to learn about the exam process. Basic concepts and principals of the CRA will be covered.

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EXHIBIT JAC-B

have tended to be inaccurate. Between 1984 and 2012, CBO, private-sector forecasters, and the Administration all systematically overestimated the path of nominal interest rates just two years into the future (CBO 2015a).

Figure 5



A central question in forming a long-run forecast is whether interest rates are statistically stationary—i.e., whether they have a tendency to return to a definite long-run mean value or average. To the extent interest rates are mean-reverting, the historical average may contain the most useful information for projecting the long-run long-term interest rate. On the other hand, if changes in interest rates are permanent (or at least, highly persistent), recent data may contain more useful information about long-run interest rates than historical data. In general, econometric tests suggest that real and nominal interest rates revert to their mean very slowly, with close to unit root (non-stationary)⁹ properties.¹⁰ Tests for non-stationarity tend to be weak, however, in that distinguishing between a true unit root and mean reversion with very high persistence is difficult in a finite sample of data (Neely and Rapach 2008).

Economic theory strongly suggests that real interest rates are bounded, if not fully mean reverting (as discussed in more detail in section III).¹¹ A high return on investment should trigger a reallocation of resources from consumption toward capital accumulation, driving down the marginal product of capital and the real interest rate over time. Similarly, a low return on

⁹ A time series is said to contain a unit root if its random changes contain a permanent component. In this case it is statistically non-stationary.

¹⁰ Hamilton et. al. (2015) reject the hypothesis that the real interest rate converges to a fixed constant. The difficulty in predicting the long-run real interest rate leads them to be skeptical of models, like the Ramsey model considered below, that place a strong emphasis on the link between output growth and the real interest rate.

¹¹ Even when interest rates are mean-reverting, and therefore stationary in the statistical sense, they can be “trend-stationary,” reverting to means that evolve deterministically over time rather than being constants. Thus, stationarity of interest rates does not rule out the possibility that they trend upward or downward over long periods as a result of somewhat predictable, secular economic forces.

EXHIBIT JAC-C

**Yield Spreads between 20-Year Maturity "A" and "BBB" Rated Utility Bonds
and 20-Year U.S. Treasury Bonds, as reported in Dr. Villadsen's Direct Testimony**

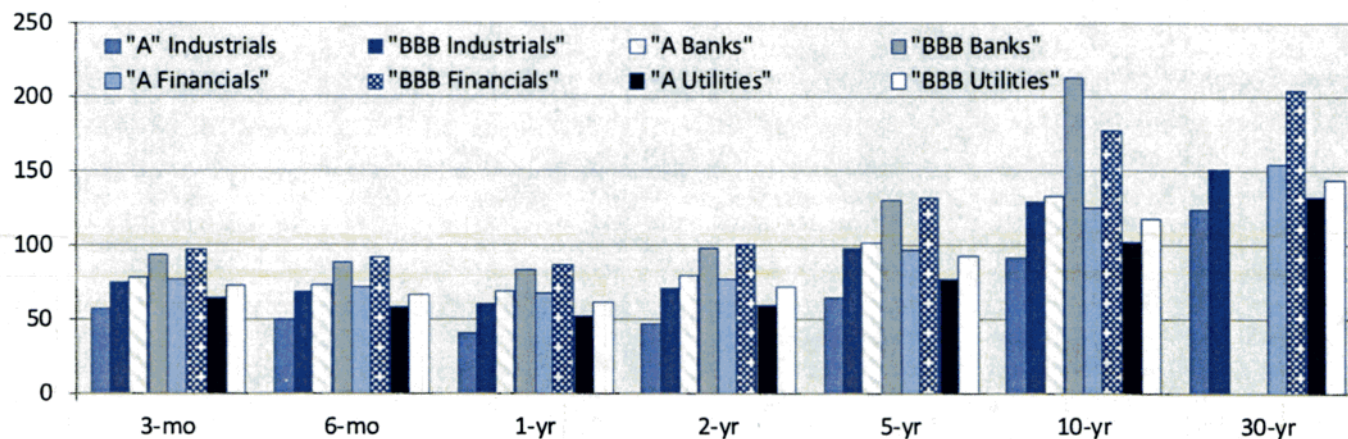
**and
Yield Spreads between 10- and 30-Year Maturity "A" and "BBB" Rated Utility Bonds
and 10- and 30-Year US Treasury Bonds
as of the Close of Market on November 7, 2016 and December 12, 2016**

Line No.	Time Period	10-Year Maturities		20-Year Maturities		30-Year Maturities	
		A-Rated Utility and Treasury	BBB-Rated Utility and Treasury	A-Rated Utility and Treasury	BBB-Rated Utility and Treasury	A-Rated Utility and Treasury	BBB-Rated Utility and Treasury
1	Average (Apr-1991 - 2007)			0.93	1.23		
2	Average (Aug-2008 - Feb-2016)			1.54	2.00		
3	As of November 7, 2016	1.00	1.18			1.33	1.44
4	As of December 12, 2016	0.92	1.14			1.26	1.35

Sources:

- ¹ Villadsen Direct, Attachment BV-3DR (Page 1 of 1)
- ² Raymond James, Fixed Income Chartbook (Data as of 11/7/2016).
https://www.raymondjames.com/pdfs/share/tfi_chartbook.pdf
- ³ Raymond James, Fixed Income Chartbook (Data as of 12/12/2016).
<https://www.raymondjames.com/wealth-management/market-commentary-and-insights/bond-market-commentary-and-analysis>

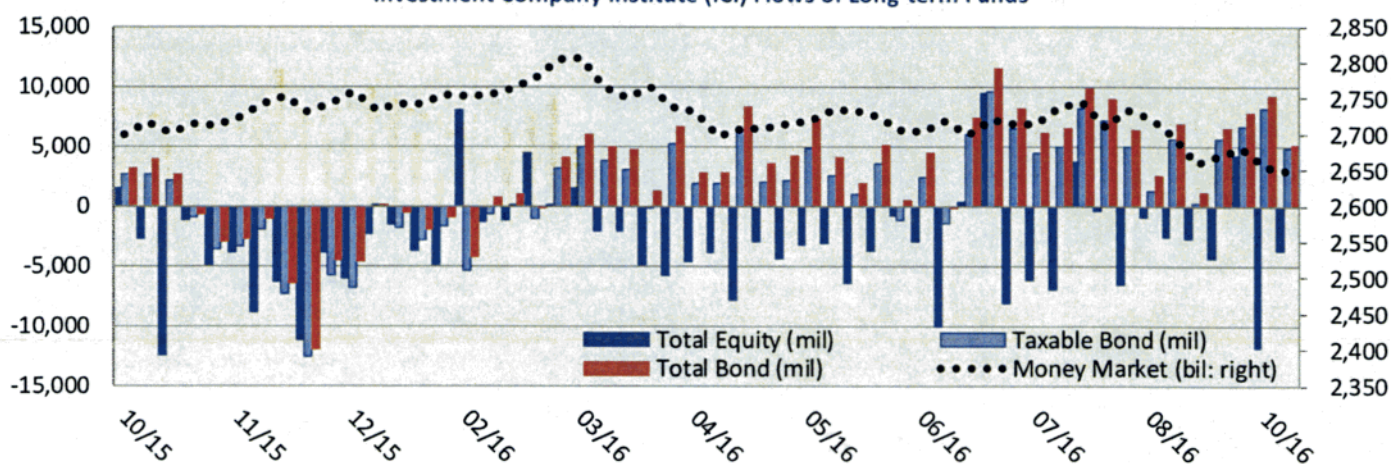
Corporate Sector Spreads to Treasuries (bp)



(Source: Bloomberg LP, Raymond James)

The amount of extra yield, in basis points, that investors require to own corporate 'A' and 'BBB' credit-quality bonds over U.S. Treasury securities.

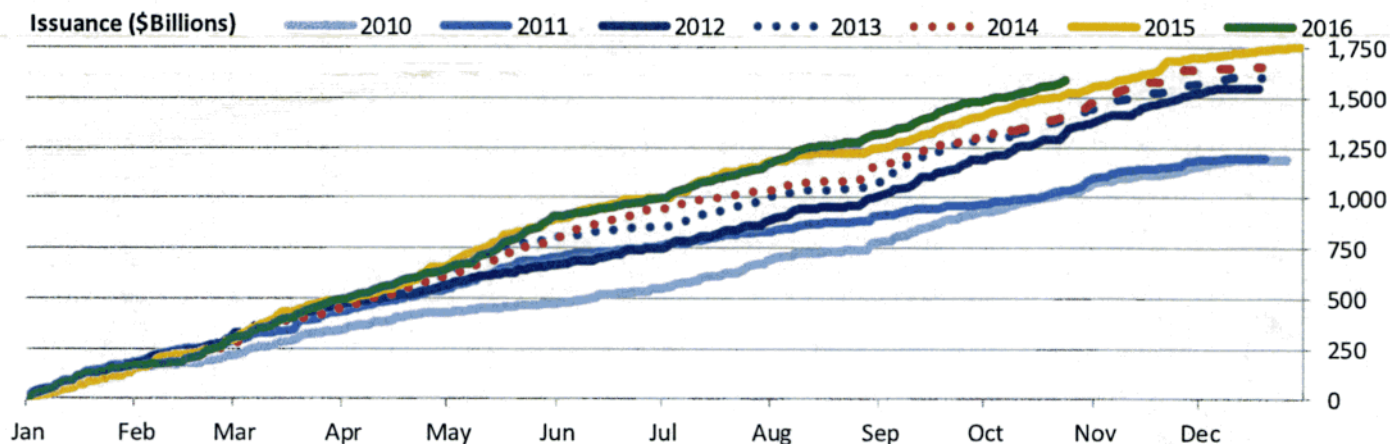
Investment Company Institute (ICI) Flows of Long-term Funds



(Source: ICI, Raymond James)

Total estimated inflows to long-term mutual funds. Flow estimates are derived from data collected from over 95% of industry assets.

Total Issuance of U.S. Corporate Debt



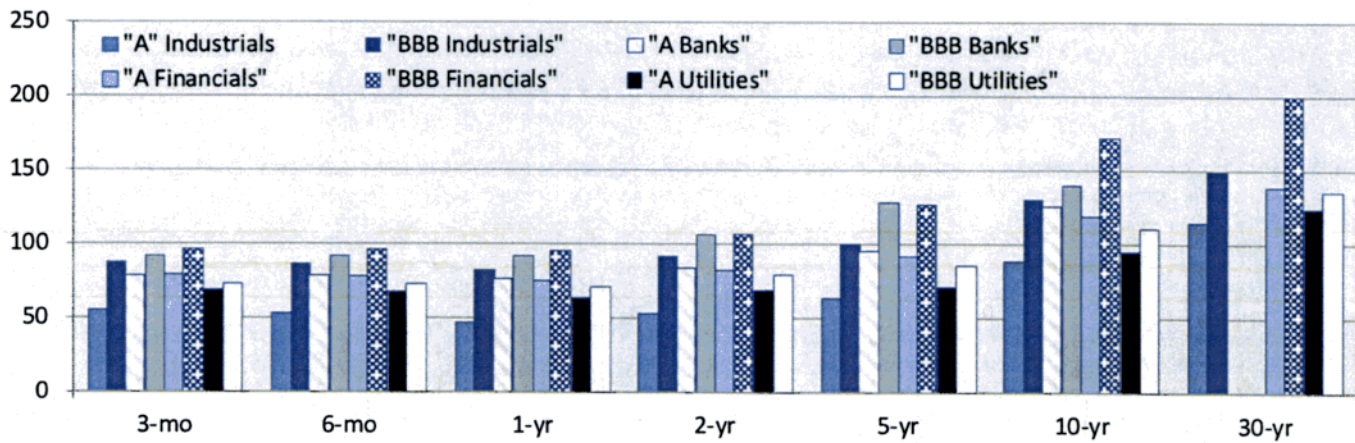
(Source: Bloomberg, Raymond James)

Total issuance of U.S. dollar denominated public and private (144a) corporate bonds sold globally.

1 basis point (bp) = 1/100th of 1% or 0.01%

Data as of: 11/7/2016

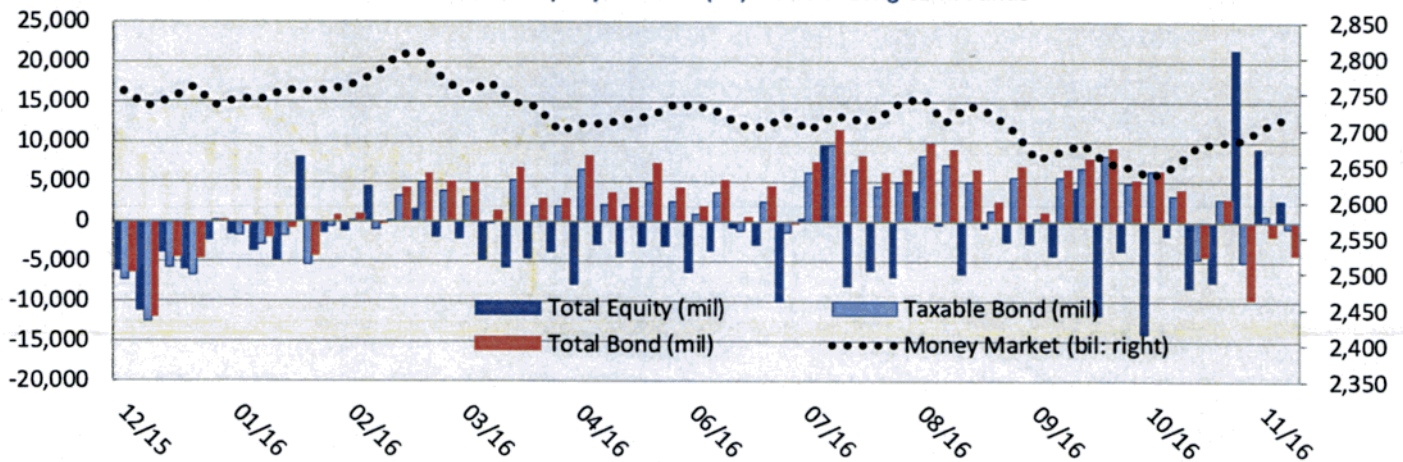
Corporate Sector Spreads to Treasuries (bp)



(Source: Bloomberg LP, Raymond James)

The amount of extra yield, in basis points, that investors require to own corporate 'A' and 'BBB' credit-quality bonds over U.S. Treasury securities.

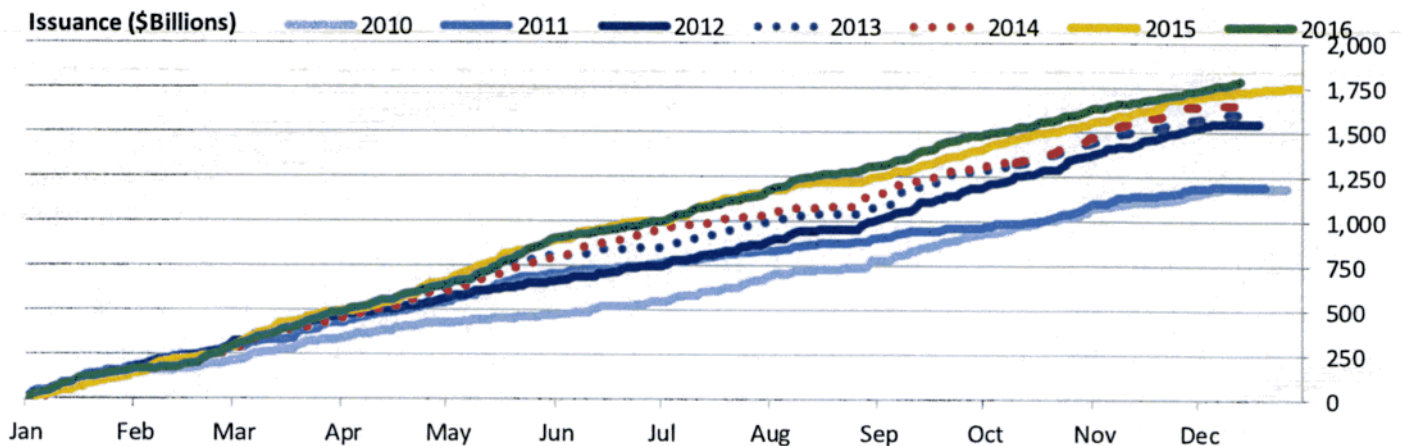
Investment Company Institute (ICI) Flows of Long-term Funds



(Source: ICI, Raymond James)

Total estimated inflows to long-term mutual funds. Flow estimates are derived from data collected from over 95% of industry assets.

Total Issuance of U.S. Corporate Debt



(Source: Bloomberg, Raymond James)

Total issuance of U.S. dollar denominated public and private (144a) corporate bonds sold globally

1 basis point (bp) = 1/100th of 1% or 0.01%

Data as of: 12/12/2016

EXHIBIT JAC-D

VIX INDEX
Analysis of Stock Market Volatility
as Measured by the VIX Index over the 12-month period,
December 2015 - November 2016

Line No.	Time Period	Monthly Activity			Number Trading Days in Month	Number Days Traded above 20.0	Days Traded above 20.0 Percent (%)
		Monthly High	Monthly Low	Average Close			
1	Dec-15	26.81	14.45	18.03	22	7	
2	Jan-16	32.09	19.25	23.72	19	19	
3	Feb-16	30.9	18.38	22.52	20	20	
4	Mar-16	20.17	13.06	15.85	22	1	
5	Apr-16	17.09	12.5	14.30	21	0	
6	May-16	17.65	13.04	14.85	21	0	
7	Jun-16	26.72	12.72	17.77	22	9	
8	Jul-16	17.04	11.4	13.16	20	0	
9	Aug-16	14.93	11.02	12.40	23	0	
10	Sep-16	20.51	11.65	14.22	21	1	
11	Oct-16	17.95	12.21	14.59	21	0	
12	Nov-16	23.01	12.16	15.24	25	4	
13							
14		Quarterly Activity					
15		Average High	Average Low	Average Close			
16							
17	12-Months (Dec. 2015 - Nov. 2016)	22.07	13.49	16.39	257	61	23.74%
18							
19	9-Months (March - Nov, 2016)	19.45	12.20	14.71	196	15	7.65%
20							
21	6-Months (June - Nov. 2016)	20.03	11.86	14.56	132	14	10.61%
22							
23	3-Months (Sept. - Nov., 2016)	20.49	12.01	14.68	67	5	7.46%

Source:

Chicago Board Options Exchange (CBOE), VIX Historical Data for the 12-month period, December 2015 - November 2016.

<http://www.cboe.com/micro/vix/historical.aspx>

Downloaded: December 7, 2016.